

WORK-RELATED STRESS: Management methods and collaboration between occupational health service and workplaces in Finland

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LIST OF ORIGINAL PUBLICATIONS

The thesis is based on following original publications results, referred to in the text by their Roman numerals (I-V):

- I Kinnunen-Amoroso M (2011) Finnish Occupational physicians' and nurses' experience of work related stress management: a qualitative study. *Industrial Health* 2011, 49:774-778.
- II Kinnunen-Amoroso M, Liira J (2013) Management of work-related stress by Finnish occupational physicians. *Occup Med (Lond)* 2013 Jul;63(5):361-364.
- III Kinnunen-Amoroso M, Liira J (2014) Finnish occupational health nurses' view of work-related stress. *Workplace Health & Safety* 2014 Mar;62(3):105-112.
- IV Kinnunen-Amoroso M, Liira J Work-related stress management between workplace and occupational health care. *Work* 2016 Jun 13;54(3):507-515.
- V Kinnunen-Amoroso M, Liira J (2014) Work-related stress management by Finnish enterprises. *Industrial Health* 2014; 52(3):216-224.

The publications are referred to in the text by their roman numerals.

ABBREVIATIONS

BBI-15	Bergen Burnout Indicator 15
CHD	Coronary heart disease
EBG	Evidence based guideline
EC	European Community
ERi	High effort and low reward
ESENER	European Survey of Enterprises on New and Emerging Risks
Eu	European Union
EU-OSHA	The European Agency for Safety and Health at Work
NICE	The National Institute for Health and Care Excellence
OH(S)	Occupational health (services)
OP	Occupational health physician
OPN	Occupational health nurse
OSH	Occupational safety and health
SIIF	The Social Insurance Institution of Finland
WHO	The World Health Organization

ABSTRACT

Work-related stress has a strong influence on workers' health. Indeed, stress at work is the main risk factor to employees' health, resulting in high costs for enterprises and losses in productivity. The main health effects of stress are directed on mental and physical well-being. Therefore, organisations and their human resource and line managers, with collaboration from the occupational health service (OHS), must strive to prevent or reduce stress factors in the workplace. Several studies have been conducted about work-related stress factors and their influence on employees' psychological and physical well-being at work. Research has also indicated how to deal with work-related stress on both the individual and the organisational level, but information about actions in practice for handling work-related stress between the workplace and OHS is lacking.

The employers have the responsibility to assess and to draw up measures to the work-related stress. They can use external resources to this if needed. Therefore occupational health care plays an important role in assessing and managing work-related stress. Methods to reduce stress can be divided into individual and organisational interventions. Determining the methods to handle work-related stress in practice can be used to evaluate current collaboration between OHS and enterprises. The aim of this study was to clarify the collaboration between workplaces and OHS related to work-related stress and the methods to assess and manage stress.

Preliminary study questions were generated through semi-structured interviews of ten volunteer occupational physicians and eight volunteer occupational nurses in the metropolitan area of Finland in May-June 2009. The interviews were analysed by qualitative methods. Based on this information, a questionnaire was developed for the cross-sectional study. The survey study was realised by email among Finnish occupational nurses and physicians, with 207 physicians and 335 nurses responding. Another self-administered email questionnaire based on the previous study was sent to a sample of enterprises (n=40) in the Finnish metropolitan area in May 2010. The data from these two questionnaires were analysed quantitatively using the SPSS 17.0 statistical programme.

Work-related stress was well known to all participants. All of the OH specialists met stressed employees in daily practice and work-related stress had been experienced in all of the surveyed workplaces. The OH specialists experienced that work stress was difficult to handle.

Neither the occupational health services nor their client enterprises had standardised tools for assessing or handling work-related stress. Specific agreed-upon protocols for handling work-related stress in collaboration were lacking in practice. Assessments of work-related stress were mostly made at the individual level with open interviews by OH. The management methods mentioned were often random at both the individual and organisational level, although actions remained mainly on the individual level and were rarely allocated to the organisation. The main intervention was to support the individual.

Collaboration between the workplace and OHS varied by mode of organising these services. However, enterprises and OHS collaborated on issues concerning work-related stress in more than half the cases. Indeed, more than 50% of the enterprises reported contacts with OHS suppliers regarding work-related stress, which was more than OHS producers reported. The exception was physicians working in enterprises with their own OHS, which reported equal contact frequency. All respondents mentioned the lack of administrative support for interventions for work-related stress.

Cooperation and collaboration on matters regarding work-related stress between OHS

and enterprises could be improved according to most survey participants.

Even though work stress is familiar and common to all participants, methods to manage it vary greatly. Standardised agreed-upon methods for assessing and handling stress at both the individual and organisational level should be developed. The procedures should be consistent across all occupational health service teams and companies to ensure the adoption of appropriate protocols. The roles and methods of OHS in supporting enterprises to manage for work-related stress should be clear and agreed upon. Also, in the OHS team, the role of physician, nurse and psychologist should be clear within the team. The OHS collaboration should reach all levels of the organisation from employees to supervisors as also to managers.

YHTEENVETO

Tutkimustiedon perusteella työhön liittyvä stressillä voi olla voimakkaita vaikutuksia työntekijöiden terveyteen. Stressin on todettu olevan suurimpia työn riskitekijöitä. Stressin keskeiset terveysvaikutukset kohdistuva psyykkiseen sekä fyysiseen työhyvinvointiin. Työstressi aiheuttaa suuria kustannuksia ja vaikuttaa tuottavuuteen. Työpaikkojen ja niiden HR-henkilöstön ja esimiesten tulisi tehdä yhteistyötä työterveyshuollon kanssa ja pyrkiä vaikuttamaan työn stressitekijöihin ja ennalta ehkäisemään stressiä.

Työhön liittyvän stressin hallintaa on tutkittu yksilö- ja organisaatiotasolla, mutta ei ole olemassa tietoa siitä, miten käytännössä stressin hallinta tapahtuu asiakasyrityksen ja työterveyshuollon yhteistyönä.

Työnantajalla on vastuu kartoittaa ja määrittää työhön liittyvän stressin hallintaan liittyvät toimenpiteet. He voivat käyttää tässä ulkopuolista asiantuntijaa apunaan. Näin ollen työterveyshuollolla on tärkeä rooli kartoittaa ja hallita työhön liittyvää stressiä yhdessä asiakasyritysten kanssa. Stressin hallintamenetelmät voivat kohdentua sekä yksilöön että yritykseen. Määrittelemällä käytännössä tapahtuvat stressin hallintaan kohdennetut yhteistyömenetelmät, voidaan arvioida tämän hetkistä yhteistyötä työterveyshuollon sekä yrityksen välillä. Tämän tutkimustyön tarkoitus on arvioida stressin arviointi- ja hallinta menetelmiä sekä yhteistyötä asiakasyrityksen ja työterveyshuollon välillä.

Esitutkimusaineisto koottiin semi-strukturoiduilla haastatteluilla 10 vapaaehtoiselta työterveyslääkäriltä ja 8 työterveyshoitajalta Suomen pääkaupunkiseudulla toukokuussa vuonna 2009. Tutkimusmateriaali analysoitiin laadullisin menetelmin. Tähän tutkimustietoon pohjautuen muodostettiin poikkileikkaustutkimuksessa käytetty kysely, johon osallistui sähköpostitse 207 työterveyslääkärää ja 335 työterveyshoitajaa. Toinen sähköpostitse toteutettu kysely toteutettiin pääkaupunkiseudulla sijaitsevalle työterveyshuollonasiakasyrityksotokselle (n=40) toukokuussa 2010. Molempien kyselytutkimusten aineisto käsiteltiin käyttäen SPSS 17.0 ohjelmaa.

Työhön liittyvä stressi oli tuttu kaikille osallistujille. Kaikki työterveyshuollon asiantuntijat tapasivat stressaantuneita työntekijöitä päivittäisessä työssään ja työhön liittyvää stressiä koettiin kaikilla kyselyyn osallistuneilla asiakasyritysten työpaikoilla. Työterveyshuollon asiantuntijat kokivat stressin hallinnan vaikeaksi.

Työterveyshuollolla tai asiakasyrityksillä ei kummallakaan ollut standardisoitua menetelmää kartoittaa tai hallita työhön liittyvää stressiä. Yhteinen ja yhdessä suunniteltu stressinhallintamalli puuttui. Stressin kartoitus tehtiin pääsääntöisesti avoimilla haastatteluilla yksilötasolla työterveyshuollon vastaanotolla. Stressinhallintakeinot olivat vaihtelevia sekä yksilö- että organisaatiotasolla ja toiminta kohdentui pääsääntöisesti yksilötasolle.

Yhteistyö asiakasyrityksen ja työterveyshuollon välillä vaihteli. Yli puolet asiakasyrityksistä ilmoitti tekevänsä yhteistyötä työterveyshuollon kanssa stressin hallinnassa. Lääkärien mukaan asiakasyrityksen omissa työterveyshuoltoyksiköissä yhteistyötä tehtiin eniten. Työterveyshuollossa arvioitiin asiakasyritysten ottavan vähemmän heihin yhteyttä stressin suhteen kuin asiakasyritykset itse arvioivat. Eniten asiakasyritykset olivat yhteydessä työterveyshuoltoon, jos se oli järjestetty yrityksen omana toimintana. Johdon tuki työhön liittyvään stressiin puuttumisessa oli puutteellinen kaikkien vastaajien mielestä.

Kaikki vastaajat katsoivat, että yhteistyötä ja tiedon kulkua työhön liittyvän stressin suhteen asiakasyritysten sekä työterveyshuollon välillä voitaisiin parantaa.

Vaikka työhön liittyvä stressi oli tuttu ja yleinen kaikille osallistujille, sen kartoitus ja hallinta vaihtelee suuresti eri toimijoiden välillä. Työhön liittyvän stressin hallinnan ja arvioinnin menetelmien tulisi olla yhteiset ja standardoidut sekä yksilö- että organisaatiotasolla.

Menetelmistä ja toimintatavoista tulisi sopia yhteistyössä työterveyshuollon tiimin ja asiakasyritysten kesken, jotta yhteiset käytännöt otettaisiin käyttöön. Työterveyshuollon rooli asiakasyrityksen työhön liittyvän stressin hallinnassa tulisi selkeyttää ja toimintatavoista sopia yhdessä. Myös työterveyshuollon tiimissä lääkärin, hoitajan ja psykologin roolit tulisi selkeyttää. Yhteistyö tulisi ulottaa asiakasorganisaation kaikille tasoille, niin työntekijöihin, esimiehiin kuin johtoonkin.

1 INTRODUCTION

Today's working conditions are affected by globalisation and opportunities in the work environment offered by new technologies and practices (Brun & Milczarek 2007), including the rapid advance of technology, the huge increase in knowledge, the emphasis on social skills and internationalisation. The work time is nowadays flexible more frequently if the job requirements need it. Many work schedules are changed timeless and the overtime is paid less frequently (ILO 2016; Kauppinen et al. 2013; Stavroula & Kortum 2008). However, work-related stress has increased in workplaces because of increased performance requirements and competition-related changes in work life. If nothing is done, the World Health Organization (WHO) estimates that the prevalence of mental diseases will increase by 2020 and they will be the second leading cause of disability (Kalia 2002).

This psychosocial work environment has long been identified as a major worldwide occupational risk factor to the health of the working population. Its association with various diseases has been demonstrated in multiple studies, but probably more apparent to enterprises and society are the vast socioeconomic consequences manifested in absenteeism, labour turnover, loss of productivity and disability pension costs to companies and society (Stavroula & Kortum 2008; Cox et al. 2000; de Smet et al. 2005; Semmer 2006; Hassard & Cox 2015).

Since the late 1990s, the Network of WHO Collaborating Centre in Occupational Health has supported a dedicated programme of work on psychosocial factors and work-related stress (Cox et al. 2000). In 2004, a programme was started to develop a framework for the management of work-related psychosocial risks and to devise best practices that WHO could promote at the international level (Leka et al. 2011). The results of this program, European guidelines for psychosocial risk management, has been released and translated as PRIMA-EF guidebook to deal with psychosocial risk management at the workplace (PRIMA-EF 2009).

In Europe, different social partners and organisations of safety and health at work have recognised the importance of worksite stress factors. Therefore, preventive actions to reduce work-related stress have been on the political agenda of most European Union (EU) countries, including Finland and, consequently, an autonomous framework agreement on work-related stress at the European level (EU-OSHA 2002; Work-related Stress 2004) was developed through a campaign of European social partners and activity of the European Agency for Safety and Health at Work (EU-OSHA). Finnish social partners created a local agreement and implemented it in 2007 through the Centre for occupational safety in Finland (Implementation of the Agreement 2006; Implementation of the Agreement 2007; Implementation of the Agreement 2008).

Guidelines for dealing with psychosocial risk factors by occupational safety and health organisations have been published by international organisations and EU agencies and are based on a risk management approach. EU-OSHA (EU) has reviewed best practices in Europe (Milczarek et al. 2012). The conclusion of the review was that the regulatory standards for practice do not fill the gap between policy and practice due to a lack of clarity regarding the framework and barriers related to enterprise characteristics and management. The level of acknowledgment, awareness and prioritisation of these issues varies between countries and is associated with a lack of expertise, research and appropriate infrastructure. Preventive actions at the enterprise level have had a low priority. Thus, systematic and effective policies to prevent and control psychosocial risks at

work are needed and they should be linked to companies' management practices with tools that support organisations at the organisational level (Milczarek et al. 2012).

An analysis of the European Survey of Enterprises on New and Emerging Risks (ESENER) revealed that the most important driver of managing work-related stress is occupational safety and health (OSH) management, and the most important barriers were lack of technical support and guidance and lack of resources. Good OSH management is the strongest predictor for all procedures and measures to deal with psychosocial risks, independent of the size, sector, status and country of origin of the enterprise. Good psychosocial risk management needs continuous support to keep up the procedures to address work-related stress (Milczarek et al. 2012). Most organisations do not have an accurate assessment of how much stress costs them each year. Stress has been shown to add to the cost of doing business in a number of ways, including absenteeism, litigation, conflicts caused by interpersonal problems, resistance to change, no time to do things right and loss of employee intellectual capital (Hassard & Cox 2015).

The American Institute of Stress has determined that 75% to 90% of all doctor visits are now stress-related (Kalia 2002). The economic loss stems from lost productivity, absenteeism, poor decision-making and stress-related mental symptoms (Kalia 2002; Hassard & Cox 2015). The enormous human and economic costs associated with occupational stress suggest that initiatives designed to reduce employee stress should be high on the agenda of workplace health promotion activities. European social partners and the EU-OSHA have tried to make all levels of organisations aware of the importance of preventing and reducing stress factors in the workplace. Therefore, they have published assessment and management tools for workplaces in their websites. Other tools created by EU collaborators, including the Finnish questionnaires as Tikka, ParTy-questionnaire, are also available (EU-OSHA 2015). All these tools are directed to workplaces and occupational and safety organisations (EU-OSHA 2013). Also, the International Labour Office has published a manual for preventing stress in the workplace (ILO 2012; ILO 2016).

The EU-OSHA has undertaken a 2014-2015 campaign against work-related stress, called "Healthy Workplaces Manage Stress", to help employers, managers and workers' representatives recognize and manage stress in the workplaces (EU-OSHA 2015). The Finnish Institute of Occupational Health (FIOH) has participated also in the campaign. The institute has held seminars, events and the theme weeks and published campaign materials in co-operations with different partners. They have published a practical tool kit for managing stress and psychosocial risks for employers for free handling different items of work-related stress (FIOH 2015). FIOH has also a website for OHS professionals to manage work-related stress. In this website there are work related stress assessment methods for OHS (FIOH 2014).

EU-OSHA's European Survey of Enterprises on New and Emerging Risks (ESENER) is an extensive survey looking at how safety and health risks are managed in European workplaces. The first survey (ESENER-1) was carried out in 2009. EU-OSHA has repeated the Second European Survey of Enterprises on New and Emerging Risk (ESENER-2) in 2014. The aspects most frequently covered by workplace risk assessments have been the safety of machines, equipment and installations (84%), followed by work postures, physical working demands and repetitive movements (75%). The psychosocial risk factors were perceived as more challenging. Also, the psychosocial risk factors appear to be more challenging to manage, as evidenced by the lack of information and adequate tools to deal with the risk effectively. ESENER-2 showed that a reluctance to talk openly about these issues seems to be the main difficulty in addressing psychosocial risks (30% of establishments in the EU-28). This, as with all the other difficulties, is reported more frequently as the establishment size grows (ESENER-2 2015).

There is scientific evidence that organisational health intervention programmes may have favourable effects on the reduction of job stressors, depression, sick leave and early retirement because they increased job satisfaction. In combination with employees' and employers' participatory approach, work environment improvements have been effective in promoting health and productivity (Work-related Stress 2004; De Boer et al. 2004; Tompa et al. 2008; Carrol et al. 2010; van Oostrom et al. 2008; Mikkelsen & Saksvik 1999; ESENER-2 2015).

Several studies and meta-analyses have been conducted on causes of worksite stress and individual and organisational interventions. Preventing work-related stress has also been cost-effective (van der Klink et al. 2001; Lamontagne et al. 2007; van der Hek & Plomp 1997; Reynolds 2000; Noblet & Lamontagne 2006).

We searched for occupational health guidelines for management of mental health disorders and stress-related symptoms. The recent review on guidelines has included guidelines in five countries (Joosen et al. 2015). Most of these guidelines deal with mental health problems at work. Three guidelines, one each from the Netherlands, Finland and Korea, deal with work-related stress (Joosen et al. 2015). Guideline recommendations have mainly focused on advice and counseling methods, as well as return-to-work interventions for occupational health professionals. In general, the guidelines have recommended providing psychological treatment, and some guidelines have recommended promoting communication with the worker and/or cooperation with the employer and other involved stakeholders (Joosen et al. 2015).

The Finnish occupational health system

In Finland, one of the most important collaborators in employees' health promotion is the occupational health service. By Finnish legislation, employers have an obligation to arrange preventive occupational health services for their employees and connected to this they can also voluntarily organise curative medical services. The Finnish occupational health legislation clearly defines the roles and duties of OHS to collaborate with enterprises in matters concerning safety and health at work (Occupational Health Care Act 1383/2001; Government Decree 708/2013).

To enforce collaboration, modifications have also been made in the Finnish Health Insurance Act (Health Insurance Act 1224/2004). The practices related to the management, follow-up and early interventions have to be documented and jointly agreed upon between the workplace and the occupational health service provider; this yields higher reimbursement rates for preventive occupational health care from the Social Insurance Institution of Finland (SIIF) (The Social Insurance Institution of Finland).

For Finnish employers, the occupational health service team is an important partner in preventing risks to the health of employees in addition to the company's own safety and health organisation (Occupational Safety Act 738/2002; Act on Occupational Safety and Health Enforcement and Cooperation on Occupational Safety and Health at Workplaces 44/2006; Occupational Health Care Act 1383/2001). By Finnish legislation, the purpose of occupational health is to prevent work-related ill health, promote the health and work ability of workers and address the well-being of the work community. The duties encompass the evaluation of risk factors at work, incorporating also psychological risks, making proposals for attenuating the risk identified and monitoring and supporting the ability of employees to cope at work (Occupational Health Care Act 1383/2001). Health examinations and workplace assessment visits are essential preventive tasks of OHS. Based on the risk evaluation, OHS develops an action plan for the workplace. The content of OHS's action plan depends on the assessed risk reduction requirements of the

workplace. The assessment is made in collaboration between OHS and the workplace (Occupational Safety Act 738/2002; Occupational Health Care Act 1383/2001; Government Decree 708/2013).

The employer's obligation to arrange the realisation of occupational health care is monitored by the health and safety authority (Act on Occupational Safety and Health Enforcement and Cooperation on Occupational Safety and Health at Workplaces 44/2006; Law on Amendment of Occupational Health Care Act 24§ 1559/2009). The employer has the right to receive compensation from the SIIF for necessary and reasonable costs imposed by the occupational health care organisation on the basis 44/2006 of the Health Insurance Act (1224/2004) Section 29. Insurance premiums for SIIF are paid by employers and employees so that at finally employers pay 88% and employees 12% of all costs of OHS.

In Finland, the occupational physician and the nurse constitute the basic team in occupational health service. They can consult psychologists, physiotherapists and medical specialists and other specialists such as occupational hygienist and social insurance specialist.

The Finnish OHS legislation defines the educational qualifications of OHS professionals (including physicians and nurses) and experts in OHS (physiotherapist, psychologist and others) who can be consulted (Government Decree 708/2013). An occupational health physician is a specially trained professional who has the right to provide OHS as stipulated by the Occupational Health Care Act (1383/2001) and the government decree (708/2013). The qualifications for OHS professionals and experts are stipulated in paragraph 12-14 of the decree. Only physicians specialized in occupational health may work as full-time in OHS. A person who works in OHS for an average of 20 or more hours per week is considered to be working full-time. A licensed physician working part-time in OHS must have taken a minimum of 15 credits in OHS studies within two years of starting to work in OHS (Government Decree 708/2013). The occupational health physician (OP) can also be a physician working before 2002 who was entitled to act as an occupational physician without specialisation at that time. This causes that in the Finnish OHS there are permanently working experienced occupational physicians who are either specialized/specializing or not-specialized. OHS also has general practitioners or other physicians, but today OPs are the great majority in OHS. The nurses working in OH must also be specialised. Paragraph 13 of Government Decree 708/2013 stipulates the position of an occupational health nurse (OHN). A licensed public health nurse working full-time in occupational health services must be a qualified public health nurse and have passed specialist studies in occupational health services at a polytechnic or have a minimum of 15 credits in occupational health service studies within two years after starting to work in occupational health services.

By law, the communal sector has to offer OH services to enterprises operating within the municipality, but the clients can also organise such services themselves or through private service providers (Occupational Health Care Act 1383/2001). Occupational health services were assessed until 2010 regularly via a survey of occupational health care in Finland (Sauni et al 2012). The situation of working conditions and well-being in workplaces has been also assessed up to 2012 (Kauppinen et al 2013). Both of assessments have been made by FIOH. In 2010 a total of 91% of the salaried workers had occupational health services available and 86% also had medical care included in the services (Kauppinen et al. 2013). By Finnish Social Insurance Institution occupational health care services were offered to 87% of salaried labour force in 2013 (Statistical yearbook of the social insurance institution 2014).

From all OHS units participating in the Occupational Health Care in Finland -survey, 31% were company's own OHS units, 27% were connected to municipal healthcare centers

and more than 40% to private OHS centers (Sauni et al. 2012; Kauppinen 2013). OHS structures have been undergoing great change in Finland. In recent years, the private sector has increased its offerings and company's own centres have declined in number. OHS of municipal health centre and the number of the company's own OHS units dropped in the 2000s while the number of public utilities and limited companies in municipal health centre has increased (Sauni et al 2012; Sauni et al 2013). In this study the different municipal health services, including OHS of municipal health centre and public utilities and limited companies in municipal health centre are combined into one communal segment.

The Finnish occupational health legislation clearly defines the role and actions of OHS to cooperate in matters concerning safety and health at work (Occupational Safety Act 738/2002; Occupational Health Care Act 1383/2001). The SIIF plays an important role in promoting collaboration between OHS and enterprises. Indeed, extra cost reimbursement is made available to facilitate collaboration between workplaces and OHS (Health Insurance Act, Chapter 13 § 5 of Amending Compensation for Occupational Health Care 1056/2010). This may enhance the interest of enterprises in the collaboration.

In the Finnish survey on OHS, physicians used considerably more time for curative care than for health surveillance or on-site work place visits (Sauni et al. 2012). Measures oriented toward the workplace are taken more by occupational health nurses, and they did the most health examinations and spent time on workplace reports (Sauni et al 2012). The occupational health services had surveyed the working conditions in 50% of workplaces (Kauppinen et al. 2013). Over half of occupational health units were already using the operational methods of support, management and monitoring of work ability as their established methods. Less than 30% of the occupational health units responded that more than two-thirds of their client companies had a common operational model to support work ability (Sauni et. al 2012). Most employees (57%) reported that they had received information, guidance and counseling about work methods from OHS (Kauppinen et al 2013).

2 REVIEW OF THE LITERATURE

2.1 WORK-RELATED STRESS

2.1.1 DEFINITION OF WORK-RELATED STRESS

According to the current WHO definition, occupational or work-related stress "is the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope" (Leka et al. 2004).

Certain factors in work that occur over a prolonged time cause stress to all people. Work demands may be related to time pressure or the amount of work (quantitative demands); they also may refer to the difficulty of the work (cognitive demands) or the empathy required (emotional demands) or even to the inability to show one's emotions at work. Demands may be physical, that is, high demands in the area of dynamic and static loads (Noblet & Lamontagne 2006; Karasek 1979; Siegrist et al. 1990; Nieuwenhuijsen et al. 2010).

Any disproportion between job demands and human resources will be stressful. In particular, working under high quality standards, low influence and low social support is the combination that is most harmful. Also, a situation in which work is stressful and at the same time only a bit rewarding is disadvantageous. Rewarding work means financial compensation, employee empowerment, dignity, security of employment, opportunities for development and a fair working environment (Nieuwenhuijsen et al. 2010; Siegrist et al. 1990; Karasek 1979; van Vegchel et al. 2005).

2.1.2 WORK-RELATED STRESS MODELS

Work-related stress has been evolved to explain works' psychosocial overloading factors' effect on the health of employees.

1. The demand-control model

Work-related stress was defined in 1970 by Karasek to include two psychosocial factors of the work environment: Work demand and control of own work demand refers to the quantity and quality of work, and work control refers to employees' control over their own work. Task-level work conditions were characterised by low control, high demand and lack of social support. This model emphasises work control. Low control and high demand have been shown to predict high rates of cardiovascular disease as well as high rates of sickness absence (van der Doef & Maes 1999; Karasek & Theorell 1990; de Lange et al. 2003; Karasek 1979).

2. The high effort and low reward model

In the early 1990s, the effort-reward imbalance (ERI) model was developed by Johannes Siegrist. This model postulates that jobs characterised by a perceived imbalance between high effort and low reward are stressful and will lead to negative health outcomes, particularly in persons with limited coping abilities. According to the model, a person with

a high need for control will respond in an inflexible way to work situations of high effort and low reward; they will be more stressed and disease prone than a person in the same situation who has less need for control. High effort encompasses the work request (work demands and obligations) and reward includes salary, respect, position and career development. Effort also includes over-commitment to work (Siegrist et al. 1990).

The ERI model defines three psychosocial dimensions at work, effort, reward and over-commitment, and postulates that a combination of high effort and low reward can lead to adverse health effects. In addition to these two work-related dimensions, over-commitment at work acts as a personal risk factor (Tsutsumi & Kawakami 2004; Siegrist & Peter 1996; van Vegchel et al. 2005; de Jonge et al. 2000; Siegrist 2010).

3. Organisational justice

The term organisational justice has been defined by Kivimäki (2007) as the extent to which employees are treated with justice at their workplace. Organisational justice involves a procedural component and a relational component. The former indicates whether decision-making procedures include input from affected parties, are consistently applied, suppress bias, are accurate, are correctable and are ethical. The latter element refers to the polite and considerate treatment of individuals by supervisors. Low organisational justice is an independent risk factor to the health of employees (Kivimäki et al. 2007; Elovainio et al. 2002; Honkonen et al. 2003; Kivimäki et al. 2003).

2.1.3 PREVALENCE OF WORK-RELATED STRESS IN EUROPEAN SURVEYS

The second most frequent work-related health problem in the EU is work-related stress and it is emerging as the most important work-related health risk (Milczarek et al. 2012; ESNER-2 2015).

The prevalence of work-related stress in the EU has been evaluated in different studies (Houtman 2007; Niedhammer et al. 2012; ESENER-2 2015). Significant differences among countries were found in all psychosocial work factors. Some countries have a significantly lower prevalence of stress (e.g. the Netherlands, Denmark, Norway) than others (e.g. countries in Southern and Eastern Europe) (Houtman 2007; Niedhammer et al. 2012).

In the ESENER 2 survey the two most frequently reported psychosocial risk factors were having to deal with difficult customers, patients, pupils, etc. (58 %) and time pressure (43 %). These were most prevalent among education, human health and social work activities and public administration.

Time pressure was most commonly indicated by establishments in the Nordic countries: Sweden and Finland (both 74%), Denmark (73%) Norway and Iceland (71%). After these came the Netherlands (62%) and Turkey (15%), Lithuania (16%) and Italy (21%). The ESENER-2 survey found that by sector, the highest proportion of establishments reporting a lack of information or tools to manage the risk effectively were in public administration, followed by finance, real estate and other technical scientific or personal services activities, education, human, health and social work activities. (ESENER-2 2015)

In some studies conducted in Europe, work-related stress was experienced less commonly by men than by women (de Smet et al. 2005; Houtman 2007). However, Niedhammer (2012) evaluated the situation in 2005 in Europe and found no differences between the stress experienced by men and or by women. Instead, there were strong gender differences in psychosocial risks. The women were more likely to be exposed to low

skill discretion, low decision authority, low decision latitude and low job promotion, whereas the men were more likely to be exposed to high psychological demands and low support, long working hours, high effort, effort-reward imbalance and work-family imbalance (Niedhammer et al. 2012). De Smet (2005) also found differences between age groups, where younger employees claim to have less control of their work.

Houtman (2007) reported that more than 50% of employees were working at a very high speed and under a tight deadline. One-third did not have control over the order of tasks, work methods or speed. Nearly 25% of European employees felt that work caused stress (ESENER-2 2015).

Prevalence of strain was higher in the occupations of legislator, senior official, manager and clerk for men and in the occupations of skilled agricultural and fishery worker and elementary occupations for women (de Smet 2005). The risk sectors were health and social services, education, public administration, banking, freight transport, hotel and restaurant and policing in various European countries (Houtman 2007).

2.1.4 PREVALENCE OF WORK-RELATED STRESS IN FINLAND

In Finland, the Finnish Institute of Occupational Health (FIOH) has evaluated workers' experience of health and working conditions and changes in work and working conditions from 1997 on. The Work and Health in Finland Survey has been conducted every three years and the latest in 2012 (Kauppinen et al. 2013).

In the last surveys, most employees felt that they had clear work targets and were working in teams where they can plan their own work. More than half of employees could influence their own work and participate in decision-making.

The most frequent cause of psychosocial overload was hurrying and being unable to complete work due of other intervening tasks. Feeling hurried on the job was reported by the majority of employees. The prevalence of feeling hurried at work has not changed in the 2000's (Kauppinen et al. 2013).

Most of workers said they work under time pressure or tight time schedules. The production employees with lower level of education worked more common in the fast pace (Kauppinen et al 2013).

One-fourth of employees in Finland have experienced their work causing a psychosocial overload. This has decreased from 1997. Most of workers felt that they recover from one workday's stress and overload before the next workday.

Quantitative overload was common in senior staff (37%) and agricultural personnel (37%). Especially overloading was experienced in sectors such as public administration, defense and compulsory social insurance, health and social service, education, information and communication and agriculture, forestry and fishery sector (Kauppinen et al. 2013).

Influence on personal working tasks was good in half the employees, most often among senior officers and those in finance as well as in trade and the retail sector (Kauppinen et al. 2013).

Stress symptoms have been experienced by 8% of workers, which has decreased from 1997. Mostly the stress symptoms were experienced in sectors public administration, national defense, compulsory social security, information and communication and education. Stress symptoms were common in directors, clerks and customer service employees.

Prolonged or repeated mental symptoms have experienced by 53% of workers during the last month (women 57%, men 49%). Among mental symptoms, fatigue was most commonly mentioned; the other symptoms were impotence, irritability and insomnia

(Kauppinen et al. 2013). Even the stress symptoms has been decreased in 2000's, the prevalence of mental symptoms has increased from the year 2009 (Kauppinen et al. 2013). In branches of business, most mental symptoms have been reported often by employees in hotels and catering, education, health and social services, as well as information and communication. The professional groups which reported mental symptoms frequently were clerks and customer service employees (Kauppinen et al. 2013).

In the Finnish survey, 58% of employees thought that the administration of their workplace was quite or very much interested in the health and well-being of employees, and 78% said that the decisions made in their workplaces were consistent. In the survey, 36% of workers defined the objectives of their work with their supervisors quite often or always and 27% sometimes. Two-thirds of participants felt that they receive quite a bit or very much support and help from their supervisor when they need it.

The main person responsible for the welfare of people in the workplace was the managing director in 46% of the responses and the human resources director in 33% (Kauppinen et al. 2013).

Overtime work has increased. One-third of the employees had flexible working hours based on the requirement of their tasks or the request of their manager (Kauppinen et al. 2013).

2.2 FACTORS CAUSING WORK-RELATED STRESS

2.2.1 FACTORS RELATED TO WORK

Causes of work stress have been linked to the work itself, including increasing demands, less freedom to control one's work, working at a very high speed, working to tight deadlines, control over order of tasks, control over work methods, control over speed, solving unforeseen problems on one's own, monotonous tasks, complex tasks, learning new things and assistance when required (Table 1).

There is strong evidence that high job demands, low job control, low co-worker support, low supervisor support, low procedural justice, low relational justice and a high effort-reward imbalance predict the occurrence of stress-related disorders (Nieuwenhuijsen et al. 2010; Bultmann et al. 2002; de Jonge et al. 2000; Noblet 2003; Trenberth & Dewe 2006; Troup & Dewe 2002; Marchand et al. 2005; Cotton & Hart 2003; Conner & Douglas 2005).

Table 1. Stressfull characteristic of work by Cox et al. in Research on Work-related Stress by EU-OSHA (modified from Cox et. al 2000)

Category	Hazard conditions
	Context to work
<i>Organisational culture and function</i>	Poor communication, low support level for problem-solving and personal development, lack of definition of organisational objective
<i>Organisational role</i>	Role ambiguity, role conflict, responsibility for people
<i>Career development</i>	Career stagnation and uncertainty, underpromotion or overpromotion, poor pay, job insecurity, low social value to work
<i>Decision latitude/control</i>	Low participation in decision making, lack of control over work
<i>Interpersonal relationships at work</i>	Social or physical isolation, poor relationships with supervisors, interpersonal conflict, lack of support
<i>Home-work interface</i>	Conflicting demands in work and home, low support at home, dual career problems
	Content to work
<i>Work environment and work equipment</i>	Problem regarding the reliability, availability, suitability and maintenance or repair of both equipment and facilities
<i>Task design</i>	Lack of variety or short work cycles, fragmented or meaningless work, underuse of skills, high uncertainty
<i>Workload/overpace</i>	Work overload or underload, lack of control over pacing, high levels of time pressure
<i>Work schedules</i>	Shift working, inflexible work schedules, unpredictable hours, long or unsocial hours

Various work factors causing stress can be divided in different ways: (Houtman 2007).

High quantitative demands: Work piles up, no time to fulfill all work tasks, necessary to work overtime, necessary to work very fast, pace of work has increased, tasks have increased, under pressure to meet production standard, unrealistic targets fixed by management, carrying out different tasks at the same time, working at limits of performance capability, skip lunch/work late/take work home.

High qualitative demands: Tasks growing more difficult, increased demands to learn new things, introduction of new technologies, being disturbed and interrupted, demands beyond capabilities as regards qualifications, work demanding intensive thinking, having to remember a lot of information for a long period of time, work demanding a lot of attention.

High emotional demands: Work in emotionally demanding situations, emotionally demanding work, work requiring that one doesn't express emotions/work requiring that one hide emotions, situations at work that raise negative feelings such as anger, having to keep one's opinion private at work.

Autonomy, learning opportunities and reward: Work appreciated by management and by society in general, good future opportunities in one's work, having influence over decisions about work/amount of work/what you do/whom you work with, variety in work, work requiring personal initiative, opportunity to learn new things through work, influence on order in which tasks are done/working methods/content of tasks/pace of work/division of tasks between employees/choice of work partners/good opportunities for advancement(promotion) at work/good opportunities to develop at work, lack of autonomy in work, insufficient resources to do the work, being disturbed and interrupted, lack of fit between work and education/experience.

Social support: Help and support from colleagues, colleagues willing to listen to your work-related problems, getting help and support from managers who are willing to listen to your work-related problems, support and encouragement from supervisors/co-workers, relations with superiors, feeling a lack of support, criticism in front of colleagues, supervisor considering the well-being of employees/paying attention to what you are saying/helps to get the job done/make people work together very well, relationship among employees.

Job security: High job insecurity, insecurity due to unforeseen changes at work, uncertainty about restructuring operations, mergers or takeovers concerning the company, risk of losing one's job, instability at work.

Commitment to work: Work appreciated by management/society in general/good future opportunities in one's work, enjoying the job, good salary, compared to most other organisations, working at your company is attractive.

Control of working hours has also been connected to work-related stress (De Raeve et al. 2007; Artzcos et al. 2007; Ala-Mursula et al. 2004; Ala-Mursula et al. 2005; Härmä 2006). In several Finnish studies, procedural injustice has been an important factor in work stress (Kivimäki et al. 2007).

Protective factors such as a sensation of work control, material and moral support, interesting work and comfortable and safe working conditions diminish the effect of stress (Working on Stress 2002). Other factors associated with work stress are shortage of staff, older workforce, more women with double workloads entering the workforce, increased diversity in the workplace, changed organisational work patterns and developments in information technology (Houtman 2007).

Time pressure, shortage of staff, tightened productivity targets and deadlines, customer demands, fragmentation of the workday and fragmentation of tasks are all factors leading to time pressures (Houtman 2007).

2.2.2 FACTORS RELATED TO THE INDIVIDUAL

Recent stress models like the effort-reward imbalance model strongly point to the importance of individual factors in contributing to the effect that exposure to working conditions may have. The commitment to work is considered significant in this respect. The general feeling is that some employees are prone to become over-committed to their work, which results in unhealthy consequences for their health.

The same kind of job characteristics and working conditions can generate different experiences of work stress. Different people have different capacities to manage strenuous or difficult situations. Experiences of stress also depend on how the situation is interpreted, what it means to a person. A person's self-generated pressure, such as an excessive commitment to work, the need for approval or a competitive spirit, can also generate stress. In addition, life situations vary, and sometimes people are more prone to experience stress. However, certain work load factors cause stress in the long term for everyone.

The concept of type A behaviour was developed by Roseman and Friedman (1958). They described type A behaviour as a major behavioural risk factor in work stress which is associated, for example, with cardiovascular diseases. This personality is associated with a high level of reactive action, which is supposed to cause also physiological responses in the body.

At least three characteristics mark the type A individual, whose risk of coronary heart disease appears, from studies in the US, to be at least twice that of the non-type A individuals:

- Strong commitment to work and much involvement in job
- A well-developed sense of time urgency (always aware of time pressures and working against deadlines)
- A strong sense of competition and a marked tendency towards aggression

These people do not have sufficient resources and means to cope with

stress. A belief in their inadequacy is considered the factor that makes the adaptive coping poor and inefficient.

Some refer to type A behaviour as a coping pattern and others as a personality trait. Various measures of type A behaviour have been developed, not all of which are strongly inter-related. (Zolnierczyk-Zerda 2000; Luszczyńska & Cieslak 2005; Jamal 1999; Hagihara et al. 1997; van Vegchel et al. 2005; Kittel et al. 1983)

Excluding particular workers or types of worker from work, which is judged to be stressful, may at first sight appear to be scientifically justified, but this may not be legally reasonable under the equal opportunity legislation of the EU member states or morally acceptable if other approaches are possible.

The evidence is not strong enough to support selective recruitment procedures. There appears to be little evidence of trait-like vulnerability to stress beyond that implied for psychological health by a personal or family history of related psychological disorders.

Type D characteristics, which are characterized by negative emotions and inhibition of these emotions, and avoid social contacts, have a negative impact on mental health (more symptoms of depression, anxiety, post-traumatic stress disorder, mental distress and passive coping and less social support) and physical health. There have been reported on behavioural and biological mechanisms of disease in apparently healthy individuals with a type D personality. Some studies have shown a negative effect of type D personality on work-related outcomes (higher work absence, higher levels of vital exhaustion and burnout and more work-related stress). The characteristics of type D also had a negative impact on mental health status and physical health status, with higher risk and levels of vital exhaustion and burnout and more work-related stress. Having a type D personality is a vulnerability factor for general psychological distress that affects mental and physical health and is associated with disease-promoting mechanisms and work-related problems in apparently healthy individuals. (Mols & Denollet 2010)

In general, protective factors for the individual are good self-esteem, sensation of work control, workmanship and good education (Working on Stress 2002).

2.3 WORK-RELATED STRESS AND HEALTH

Work-related stress can influence the physical and mental health of employees. A negative change in leadership, organisational commitment and reporting job strain increased the risk for a negative change in health. Improved leadership and social climate increased the chance for positive changes in health. By improving psychosocial factors at work, it is possible to promote employee health as well as prevent employee ill-health (Lohela et al. 2009).

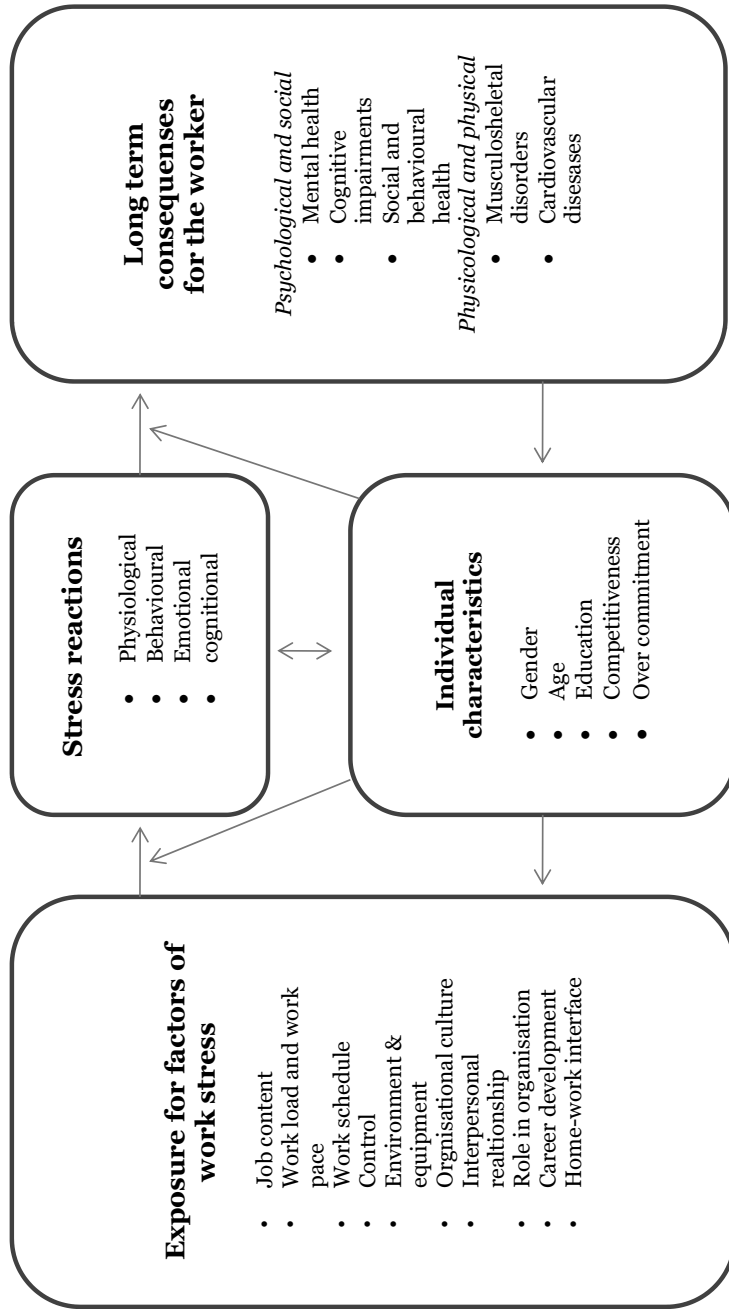
Stress related health effects and risks have been described in Figure 1.

2.3.1 MENTAL HEALTH AND STRESS

Change in working life requires psychosocial skills and qualities and has an impact on psychological well-being in work. Work tasks have become more psychologically and cognitively challenging and, due to changes in work conditions, stress and depressive symptoms are more common. The basis of mental illness is a combination of biological, psychological and social risks factors.

Work-related stress can cause negative consequences such as fatigue, cynicism and reduced professional self-esteem. In addition, there are plenty of other stress symptoms. However, the burnout syndrome is not classified as a disease according to the International Classification of Diseases 10 (WHO Classification of Diseases 2016).

Figure 1: Risks for Work Stress by Hassard and Cox in Work-related Stress: Nature and Management (modified from Hassard & Cox 2015).



Different reviews provide consistent evidence that perception of adverse psychosocial factors in the workplace (for example psychological demands, low support, lack of procedural or relational justice) is related to elevated risk of subsequent depressive symptoms or a major depressive episode (Bonde 2008; Theorell et al. 2015).

Solid evidence suggests a prospectively established association between chronic psychosocial stress at work, as defined by theoretical models, and depression (Bonde 2008; Siegrist 2008).

Working in a job with high demands and low control or being engaged in effortful work that provides low rewards in terms of money, esteem, promotion prospects and job security increases the risk of depression by about 80% within a few years (Siegrist 2008; Stansfeld & Candy 2006).

Robust and consistent evidence exists that high demands and low decision latitude and high effort and low rewards are prospective risk factors for common mental disorders and that the psychosocial work environment is important for mental health (Stansfeld & Candy 2006).

In different studies, stress has been connected to sleeping problems (Åkerstedt 2006; Knudsen et al. 2007; Jansson & Linton 2006).

2.3.2 MUSCULOSKELETAL SYMPTOMS AND STRESS

Psychosocial work factors influence back pain and neck pain, and they have a greater impact on work ability than the failure of biomechanical factors. Cognitive factors were associated with the development of pain and incapacity. Depression, anxiety and stress were associated with pain and incapacity. Back pain was associated with job satisfaction, monotonous work, social relationships, work, job demands, work-related stress and perceived work ability (Haukka et al. 2011; Ghaffari et al. 2008).

According to Martimo (2010), most barriers and facilitators of staying at work despite musculoskeletal disorders (MSDs) are related more to psychosocial, workplace and management issues than to the physical disorders themselves.

There seems to be a connection between different musculoskeletal symptoms such as neck/shoulder disorders and low back pain and high psychosocial work demands (Kraatz et al. 2013; Linton 2001; Hartvigsen et al. 2004; Bongers et al. 2006; da Costa & Vieira 2010).

Even though the causal process of psychosocial factors in the development of musculoskeletal problems is unclear, most psychosocial stressors have small but significant lagged effects on the development on musculoskeletal problems (Kraatz et al. 2013; Lang et al. 2012; da Costa & Vieira 2010).

Psychological factors can have an independent causal influence on the development of these disorders (Kraatz et al. 2013), but evidence suggests that exposure to both physical and psychosocial workplace risk factors is more likely to cause musculoskeletal symptoms than high exposure to either one alone (Devereux et al. 2002).

2.3.3 CARDIOVASCULAR DISEASES AND STRESS

Work stress has been associated with a statistically significant increase in risk of cardiovascular diseases in men (Backe et al. 2012; Neylon et al. 2013; Steptoe & Kivimäki 2012; Kivimäki et al. 2006; Belkic et al. 2004; Siegrist 2010).

The strongest evidence of the association of psychosocial stress at work with risk of cardiovascular disease is obtained from prospective epidemiological observational studies. Chronic stress predicts the occurrence of coronary heart disease (CHD). High psychological demands such as a lack of social support are risk factors for CHD among men (Backe et al. 2012; Neylon et al. 2013; Steptoe & Kivimäki 2012; Kivimäki et al. 2006; Belkic et al. 2004; Siegrist 2010). The average excess risk is 50% for CHD among male employees with increased work stress (Kivimäki et al. 2006).

Several studies have shown that job strain is a risk factor, but in more recent studies, these associations have been better explained by the association between demands and CHD disease (Eller et al. 2009). Consistent associations have also been found between general psychological stress, work-related stress, locus of control and depression and risk of cardiovascular disease (Neylon et al. 2013).

2.3.4 OTHER DISEASES OR SYMPTOMS AND STRESS

Work-related stress is also associated with burnout, difficulty of sleeping, fatigue, tension, over-exhaustion, depression, feeling tense or irritable because of work, feeling discouraged, loss of memory and lack of concentration (Åkerstedt 2006; Sallinen et al. 2006; Houtman 2007).

Mental fatigue is generally associated with conflicts in roles, role ambiguity, work pressure and physical load. In particular, work pressures are a major factor. Greater autonomy has been associated with emotional exhaustion. Symptoms of general disorders have been related to the negative characteristics of work: ill-treatment, role conflict, job stress, role ambiguity and physical workload (Donders et al. 2007).

Work-related stress seems to be a negative occupational exposure. Stress experience in work correlates with poor health behaviours such as smoking, poor food choices, low levels of exercise and even decreased sleep time (Hammer & Sauter 2013). However, there seems to be no association between work stress and type 2 diabetes (Cosgrove et al. 2012) or cancer (Heikkilä et al. 2013).

2.4 SICKNESS ABSENTEEISM/PRODUCTIVITY LOSS AT WORK

Work-related stress is not classified as a mental disorder and it is not a disease by classification of diseases ICD-10. Therefore, it does not justify sickness insurance compensation during sick leave in Finland. However, work-related stress influences the sick leave rate. A study conducted in 2000 by EU-OSHA on work-related stress showed that stress causes more than a quarter of work-related sickness absences. High job stress was an independent risk factor increasing sickness absence, especially for men (Donders et al. 2007; Michie & Williams 2003).

Employees with low back pain and low social support from supervisors and colleagues, low decision latitude, high psychosocial work demands and a poor subjective prognosis have a lower chance of returning to work from long-term sick leave (Virtanen et al. 2007). In some studies, certain work factors such as low decision-making ability and low social support were directly related to higher rate of sickness absence (Melchior et al. 2003).

Sickness absence due to psychosocial health complaints is associated with job strain that results from the combination of high psychological demands and low decision latitude (Duijits et al. 2007; Michie & Williams 2003). Also, organisational injustice in the workplace is related to work stress and sickness absence (Elovainio et al. 2005; Kivimäki et al. 2003).

Other work-related stress factors forecasting an absence due to sickness were lack of work orientation, lack of supporting leadership, role ambiguity, poor pay, monotonous work, low work control, lack of employee participation in decision-making and work time control (Michie & Williams 2003; Suominen et al. 2007; Virtanen et al. 2007; Ala-Mursula et al. 2004; Head et al. 2006; Elovainio et al. 2005; Melchior et al. 2003; Ala-Mursula et al. 2005; De Raeve et al. 2007).

2.5 ASSESSMENT OF WORK-RELATED STRESS

The workload focuses on the characteristics of the job regardless of who does the job. The assessment should consider the quantity and the quality as well as intensity of the workload.

A wide number of instruments can be used to measure psychosocial factors in the work environment at the individual, group and/or organisational levels (Tabanelli et al. 2008). Several standardised well-functioning assessment instruments can be used to assess work-related stress in research projects, but it seems they are not used in practice (Theorell 2012).

In Finland, the workload assessment is based on the employer's statutory obligation to determine and identify the hazards and risk factors in the work, the working environment and the working conditions and to assess their

importance to safety and health in promoting work safety and health (Occupational Safety Act 738/2002). In this effort, the employer can take advantage of the expertise of the OHS. Stress assessments can be conducted at the organisational and/or individual level.

2.5.1 STRESS ASSESSMENT AT THE ORGANISATIONAL LEVEL

At the organisational level, psychosocial risks can be evaluated within a general risk assessment. This risk assessment can be divided into different parts –hazard identification, risk mapping /identification of measures initiated – in determining the adequacy of measures taken and, where appropriate, in determining whether more should be done with regards to recording observations, assessments, inspection intervals and the impact of measures taken. The most common way to measure different variables is via a self-report questionnaire (Milczarek et al. 2012).

In Finland one of the most commonly used risk mapping method in workplaces is The Risk Assessment in the Workplace-workbook made by the Ministry of Social Affairs and Health. The workbook is intended for use by the company's own personnel and risk assessment of their own work (Riskien arviointi työpaikalla 2013).

Finnish Institute of Occupational Health (FIOH) has developed a risk assessment method for psychosocial factors called Tikka (Lindström 2004), which can be used in a workplace survey visit. There is also a questionnaire created in Finland that is used more frequently in individual-level assessments, the Work Stress Questionnaire (Elo 1992). Nordic countries have developed the General Nordic Questionnaire for Psychological and Social Factors at Work (QPS Nordic) (Elo et al. 2002; Elo et al. 2001; Lindström et al. 2000).

2.5.2 STRESS ASSESSMENT AT THE INDIVIDUAL LEVEL

More assessment methods exist for the individual level than the organisational level (Theorell 2012; Tabanelli et al. 2008; Albin et al. 2011), but different studies have found that these methods are valid mostly for epidemiological purposes (O'Neill et al. 2008). More evaluating studies are needed to identify more accurate methods to assess work-related stress (Gray et al. 2011; Nieuwenhuijsen et al. 2010).

In Finland, a single-item measure of stress symptoms has been used: "Stress refers to a situation in which a person feels tense, restless, nervous or anxious or finds it hard to sleep, with thoughts constantly bothering sleep. Have you experienced this kind of stress in the last few days?" Answer on a scale from 1 to 5 where 1 is not at all, 5 is very much (Elo et al. 2003). The single-item measure of stress symptoms was shown to be a valid measurement device to obtain a group-level finding of mental health stress symptoms of the issue reflected most clearly in psychological symptoms and sleep disturbances. The one question measure has been used individually for

screening purposes. A longer form of Work Stress Questionnaire can be used for more detailed individual-level assessments (Elo 1992).

The assessment can be made using open questions by interviewing individuals. If the employee has stress symptoms, these can be assessed and evaluated in an interview. The interview should identify the employee's health and functional capacity, job satisfaction, commitment to work and the organisation and other life stressors.

In Finland, employees have the right to ask for an investigation of workload. Reasons to request such an investigation are based on the work being regarded as causing a debilitating physical or psychological symptoms through the employee's self-assessment of occupational exposure. However, OH will always assess the need for the report (Occupational Health Care Act 1383/2001 Section 12).

2.6 WORK-RELATED STRESS INTERVENTIONS

Work stress interventions can be modeled by level of intervention (primary, secondary and tertiary) and mode of intervention (Table 2 and table 3).

2.6.1 ORGANISATION LEVEL INTERVENTIONS

Actions to prevent work-related stress should be taken in the workplace where the work-related stress factors exist. The actions on organisational level can be preventive or curative.

The number of studies on worksite stress interventions has increased and evidence of these interventions' effectiveness is accumulating. Several literature reviews have evaluated both organisational interventions and individual-level interventions with an effect on both the individual's well-being and the organisation's outcomes.

The method and effectiveness of stress interventions in these studies varied, but none of the interventions found effective at the individual level has been found effective at the same time in the organisational level (Lamontagne et al. 2007). Therefore, to be effective, stress interventions should also be conducted at the organisational level and alter or modify the sources of stress in the work environment (van der Klink et al. 2001; Jones et al. 2003; Lamontagne et al. 2007; Semmer 2006; Reynolds 2000; Mills et al. 2007; Anderzen & Arnetz 2005; Bambra et al. 2007).

Even though information on work-related stress factors and different interventions is available, only a few evidence-based recommendations are available from OHS to handle stress, and most of these are designed to handle stress at the individual level (Richardson & Rothstein 2008; van der Klink & van Dijk 2003; Liira et al 2010). Adherence to mental health guidelines has not been as high as expected (Rebergen et al. 2006).

Table 2. Levels of intervention of work related stress (Modified from Hesselink & Jain 2015)

	Legislative/policy	Employer/organisati on	Job/task	Individual/job interface
Primary	Legislation to limit hours of work	Work-family programmes	Job/task design, job enrichment, job rotation	Health promotion programmes
Secondary	Work compensation	Return to work programmes	Provision light duty jobs	Stress management programmes Employee assistance programmes Disease management programmes
Tertiary		Company provided long-term disability benefits		

Table 3. Model for categorising stress management interventions created by Bhui et al. 2012 (adapted from de Jonge and Dollard 2012)

Level	Organisational	Individual and organisational	Individual
Primary prevention	Improving work content, fitness programmes, and career development	Time management, improving interpersonal skills, and work/home balance	Pre-employment medical examination and didactic stress management
Secondary prevention	Improving communication and decision making and conflict management	Peer support groups, coaching, and career planning	Cognitive behavioural techniques and relaxation
Tertiary prevention	Vocational rehabilitation	Posttraumatic stress assistance programmes and group psychotherapy	Rehabilitation after sick leave, disability management, case management, and individual psychotherapy
Outcome measure	Productivity, turn-over, absenteeism, and financial claims	Job stressors such as demands, control, support, role ambiguity, relationships, change, with burnout	Mood states, psychosomatic complaints, subjective experienced stress, physiological parameters, sleep disturbances, and health behaviours

Organisational-level actions suggested by the European Foundation to improve living and working conditions (Reynolds 2000; van der Klink & van Dijk 2003; Eurofound 2012)

- promotion of organisational justice
- clarification of the work role
- clarification and promotion of workplace social relations
- intervention for inappropriate behaviour
- selection of appropriate tasks
- editing of job description and diversification if possible
- promotion of development possibilities and training
- promotion of the organizational influence opportunities
- promotion of influence on own working time

Attention should be paid to leadership skills in the workplace. Providing supervisors with necessary skills and information on mental health, including relevant occupational stressors, has a favorable effect on workers' mental health, at least in the short term. Conflict handling in the workplace is associated with lower levels of perceived work-related stress. Managers' good listening skills are also associated with lower levels of magnitude in the experience of work-related stress. Promotion of communication in the workplace is associated with reduced psychological distress (Houtman 2007; Luszcynska & Cieslak 2005; Tsutsumi 2011; Eguchi et al. 2012).

Although psychosocial risks and work-related stress are important occupational health and safety concerns they are not always recognized as such in various countries (Iavicoli et al. 2011).

Europe has started to harmonise practice and current methods in the area of psychosocial risk management (Leka et al. 2011; Milczarek et al. 2012; EU-OSHA 2013).

In Britain, The National Institute for Health and Care Excellence (NICE) has produced a guideline based on the best available evidence on workplace policy and management practices to improve the health and wellbeing of employees including mental wellbeing at work. (NICE 2015).

2.6.2 INDIVIDUAL LEVEL INTERVENTIONS

The most common way to combat work-related stress is to focus the intervention on the individual without considering the working conditions, even though work-related risk factors have been identified. Individual cognitive-behavioural counselling appears to reduce perceived harmful work-related stress most effectively. Short-term programmes seem to be more cost-effective than longer term programmes. The counselling seeks to change the individual's thinking to improve resistance to stress and stress management. In different studies, cognitive-behavioural therapy has been carried out by psychologists or other trained personnel. Also, other individual interventions may be useful in the management of stress. For example, benefits can be achieved from physical exercise, meditation and the use of relaxation methods. (Richardson & Rothstein 2008; Mimura &

Griffiths 2003; Marine et al. 2006; van der Klink et al. 2001; de Vente et al. 2008; Gardner et al. 2005; Czabala et al. 2011; Ruotsalainen et al. 2015)

There is no medication for work-related stress, but stress-related somatic and psychiatric symptoms often need symptomatic drug treatment. Work-related stress seems to increase depression and anxiety disorders and thus the need for depression medication (Bonde 2008; Theorell et al. 2015; Lindström 2004; Virtanen et al. 2007; Siegrist 2008).

A recent review on burnout prevention interventions collected data of before-after trials in individual- and organisation-level interventions (Awa 2010). The organisation-based interventions had a longer positive effect than individual-based interventions.

2.7 COLLABORATION BETWEEN OHS AND THE WORKPLACE

The responsibility for the healthiness of work and measures to make it healthier is always the employer's. In doing this, the employer can use different experts (Milczarek et al. 2012; Work related Stress 2004). In Finland, the employer can rely on the expertise of occupational health care professionals. The responsibility of occupational health care professionals is to help map working conditions, assess risks and their health consequences and propose possible remedies for employers, as established by the Finnish Occupational Health Care Act. The actions of occupational health care should be undertaken with the collaboration of the employer, occupational safety and health and employees and their representatives (Occupational Health Care Act).

The Social Insurance Institution of Finland plays an important role in enhancing collaboration between OH and enterprises. New legislation promotes the collaboration of OHS and enterprises (Government Decree 708/2013). Extra cost-reimbursement facilitates design and activities in the field for workplace health promotion with an emphasis on early detection of threats to the workability and action in collaboration with superiors and OH. OH's capability to support the enterprises must also be ensured.

2.8 STRESS PREVENTION GUIDELINES

Guidelines for stress and mental health problem management have been developed in many countries. The guidelines have been targeted on physicians, health care personnel and health care managers (Table 4).

Table 4. International Occupational Health Guidelines for the Management of Mental Health Disorders and Stress-related Psychological Symptoms developed by Joosen et al. (Modified from Joosen et al. 2015).

COUNTRY	GUIDELINE	TARGET USERS	REFERENCE
The Netherlands	Management of mental health problems of workers by occupational physicians	Occupational physician	van der Klink & van Dijk FJ 2003
The Netherlands	Multidisciplinary guideline adjustment disorders and burnout for primary health professionals	General practitioners, occupational physicians and psychologist	Verschuren CM et al. 2011
The Netherlands	Multidisciplinary guideline employment support for people with severe mental health problems	(care and occupational) professionals involved in the vocational rehabilitation of patients with severe mental illness	Van Weeghel J, et al 2011
The Netherlands	National primary care collaboration agreement (LESA)	General practitioners, occupational physicians and psychologist	Bastiaanssen M et al 2011
The Netherlands	Dealing with physically explained complaints and somatization	Occupational healthcare professionals	STECR 2006

The Netherlands	Fighting work related stress in the education and health care sectors	Occupational healthcare professionals	STECR 2003
The Netherlands	Work and psychological symptoms: guideline for psychologists	Psychologists	NIP/LVE 2005
The UK	Mental health and employment in the NHS	NHS managers and occupational health professionals	NHS Employers. Mental Health and Employment in the NHS 2008
The UK	Workplace interventions for people with common mental health problems: evidence review and recommendations	Managers, occupational health professionals, other interested parties in making management decisions	Seymour L & Grove 2005
Japan	Manual of support for RTW of workers absent with mental health problems	Relevant actors at the workplace	Ministry of Health Labour and Welfare 2009
Finland	Depression. Good practices in occupational health	Professionals in OHS	Pirkola et al. 2009
Finland	Work-related stress. Good practices in occupational health	Occupational health physicians and nurses	Liira et al. 2010
Republic of Korea	Guideline for the initial response for acute stress after massive disaster at workplace	Relevant managers and personnel at the workplace	Korea Occupational Safety & Health Agency 2011
Republic of Korea	Supervisors and managers' guideline for the management of job stress	Relevant managers and personnel at the workplace	Korea Occupational Safety & Health Agency 2011

The effectiveness of a Dutch national guideline for the management of employees with mental health problems was investigated one year after the publication, but the Guideline adherence by Dutch OPs has not been as high as expected (Rebergen et al. 2006).

2.9 LEGISLATION RELATED TO WORK-RELATED STRESS

The Occupational Safety and Health Act (738/2002) specifies the employer's responsibility, with the employer's general disposal obligation made clear: The employer has the duty to ensure employees' safety and health at work. To this end, the employer must take into account the work, working conditions and other aspects of the working environment as well as employees' personal issues. The employer must select, design, measure and implement the necessary arrangements to improve working conditions. The employer must ensure that the safety and health measures prove necessary in the light of the employer's organisation for all parts of the operation. The employer must assess the job and the nature of the activity, systematically and adequately analysing and identifying the work, working hours, work space, the rest of the working environment and working conditions with respect to hazards and risk factors; if such factors cannot be removed, their importance for workers' safety and health should be assessed. The labor inspectors monitor the psychosocial load in workplaces and corresponding management activities to prevent overload due to psychosocial risk factors (Psykososiaalisen kuormituksen valvonta 2012).

In European level the worksite stress prevention is organized by EU-OSHA. The prevention actions to reduce work-related stress have focused on the political agenda, with most European countries, including Finland, agreeing with the EU's Framework Agreement in 2004 through a campaign of European social partners. Finnish social partners developed a corresponding local agreement and the Centre for occupational safety in Finland implemented it in 2007 (EU-OSHA 2002; Work-related Stress 2004; Implementation of Agreement 2006; Implementation of Agreement 2007; Implementation of Agreement 2008). The total costs of mental health disorders for organisations and national economies have been evaluated at the European level. The preventing and managing psychosocial risks is evaluated to be an important task. Therefore EU-OSHA has organized a special campaign "Healthy workplaces manage stress" 2014-2015 for prevention of work-related stress. In Finland the department of occupational safety and health at the Ministry of Social Affairs and Health is acting as national Focal Point in Finland (EU-OSHA 2015).

3 AIM OF THE STUDY

The general aim of this study was to investigate methods used to assess and manage work-related stress by occupational health services and workplaces and to study their collaboration in stress management.

This study concentrated on the work-related stress experience, not other psychosocial risks of the workplace such as violence or bullying, which are often included in discussions of work-related stress.

The more particular aim of this study was to discover:

1. The knowledge and methods to handle work-related stress by occupational health physicians and nurses in private, communal and company's own OHS.
2. Collaboration between OHS and workplaces in stress management.
3. Workplace practices and responsibilities in handling work-related stress.

4 PARTICIPANTS AND METHODS

The thesis included three studies representing two different types of studies: a qualitative study (Study 1 - original article I), and cross-sectional questionnaire studies to occupational health service (Study 2 - original articles II, III, IV) and enterprises (Study 3 - original article V).

4.1 STUDY DESIGN AND PARTICIPANTS

4.1.1 STUDY DESIGN AND PARTICIPANTS IN STUDY 1

In the qualitative study, the participants were volunteer occupational physicians (n=10) and nurses (n=8) from the Finnish metropolitan area. The sample was chosen to reflect variation in age, gender, professional experience and workplace.

Three male and seven female physicians participated. All of them had several years of experience in the occupational health care field and had worked in both the private and public occupational health care sectors. Two participants were physicians specialised in occupational health care, and the rest were in the process of specialising in occupational health care. The eight occupational health care nurses interviewed were all females with working experience in private and public occupational health care services ranging from 1 year to more than 20 years. The sample was chosen to reflect variation in age, gender, professional experience and workplace.

The results of study 1 are published in article I.

4.1.2 STUDY DESIGN AND PARTICIPANTS IN STUDY 2

Study 2 was a cross-sectional survey with a study population comprising all occupational health physicians and nurses belonging to the Finnish Association of Occupational Health Physicians and to the Finnish Association of Occupational Health Nurses in 2009. In May 2009, a self-administered questionnaire was sent via e-mail with a covering letter to all 954 occupational physicians who had an e-mail address in the register of the Association and to 1,419 occupational nurses.

The criterion for inclusion was working in the occupational health care area as a physician or nurse.

Of the 954 physicians invited to participate, 222 responded and of the 1,419 nurses invited to participate, 353 responded; 290 e-mails were returned due to missing information or as undelivered mail. A total of 222

physicians (23%) and 353 (31%) nurses responded, of whom 34 were excluded as not working as occupational physicians/nurses. The final sample was 207 occupational physicians (22 %) and 335 occupational nurses (30 %) who responded to the self-administered anonymous questionnaire.

The final sample included 207 physicians from across Finland because those who did not work in OHS were excluded from the analyses. The physicians were stratified according to their professional grade in occupational medicine and the type of OH provider. The respondents were quite experienced as physicians – their average age was nearly 50, they had on average 16 years' experience in OHS and two-thirds were either specialised or specialising (see Table 5).

Occupational physicians' working experience varied according to their place of work and grade of specialisation. Specialising physicians were the youngest and had worked only six years on average in the OH field. Unspecialised and specialised physicians were older and had worked nearly 20 years on average in OHS. The physicians working in enterprises' own OHS had the longest experience in the OH field.

Among physicians, 32% were not specialised OPs, 20% were in the stage of specialising in OH and 48% were specialised. The OPs without specialisation were on average 52 years old. 70% of them were older than 50 years and they had on average working time of 19 years. Among non-specialised physicians more than 50% had worked more than 20 years in the OH field. Specialised physicians were on average aged 48 years and had working time of 18 years. Specialising physicians were the youngest, with a median age of 41 years, more than 60% was younger than 45 years. They had on average working experience of 6 years. 93% of specialising physicians had worked in OH less than 10 years and among them 57% had worked less than 5 years.

Approximately 21% of physicians worked in company's own OHS centre, 40% in the private sector and 39% in the municipal sector. For those physicians working in company's own OHS centre, the average working experience spanned 20 years and the mean age was 49 years. In the private sector, the physicians had been working 15 years with a median age of 47, and in the communal sector, working time was 12 years with a median age of 46. The median working time of all physicians was 16 years and the median age was 46 years.

Table 5. Demographic data of occupational physicians: n (%), mean in years
workplace: company's own OHS, private OHS, municipal OHS

Gender	Women n (%)	Men n (%)	Total n (%)
	75(37%)	61(30%)	207
Age categorized n(%)			
<40	12(16)	8(13)	29(14)
41-50	28(37)	17(28)	68(33)
51-60	33(44)	29(48)	96(46)
>60	2(3)	7(11)	14(7)
Age			
mean in years (SD)	46(1,6)	48(1,5)	47(1,6)
not specialized	51(1,0)	54(1,1)	51(1,1)
Specializing	40(1,7)	43(1,4)	41(1,5)
Specialized	46(1,2)	48(1,8)	47(1,5)
Workplace n (%)			
Municipal OHS	27(36)	5(8)	49(24)
Private OHS	31(41)	35(57)	103(50)
Company's own OHS	17(23)	21(35)	55(26)
Specialization n (%)			
Not specialized	23(30)	22(36)	67(32)
Specializing	17(23)	10(16)	41(20)
Specialized	35(47)	29(48)	99(48)
Working time in years mean(SD)			
Total	13(8,9)	18(10,7)	16(10,1)
[range]	[1-32]	[1-43]	[1-43]
Company's own OHS	18(8,7)	20(10,4)	20(9,5)
Private OHS	12(7,6)	17(11,0)	15(10,1)
Communal OHS	11(9,5)	17(11,3)	12(9,6)
Not specialized	17(8,6)	21(8,5)	19(9,3)
Specializing	4(4,7)	7(7,4)	6(5,2)
Specialized	14(7,8)	20(11,0)	18(9,8)

A total of 335 occupational nurses responded to the questionnaire. A quarter of the respondents worked in company's own OH centre, 45% in the private sector and 30% in municipal OHS. The respondents' average age was 45 and they had worked on average 15 years in the OH field. The reported working experience was 17 years in company's own OH service, 15 years in the private sector and 14 years in the municipal sector. The average age in company's own OH was 47; it was 44 in private OH services and 45 in the municipal sector (see Table 6).

The results of work-related stress management given by the occupational physicians are published in article II and the results of occupational health nurses are published in article III. The article IV includes the results of co-operation between OH and workplaces.

Table 6. Demographic data of occupational nurses participating in the survey: n (%), mean in years

Variable	
n=total participants	n=335
n=female/n=men/n=missing	210/2/123
Age	Total n=333
mean in years	45
Company's own OHS in years mean	47
Private OHS in years mean	44
Municipal OHS in years mean	45
Age categorized n (%)	n= 333 (%)
<30	14(4)
31-40	69(21)
41-50	104(31)
51-60	123(37)
>60	23(7)
Working time	n= 332
Total in mean years	14,9
Company's own OHS in mean years	16,5
Private OHS in mean years	14,8
Municipal OHS in mean years	13,6
Workplace n(%)	n=334 (%)
Company's own OHS	83(25)
Private OHS	151(45)
Municipal OHS	100(30)

4.1.3 STUDY DESIGN AND PARTICIPANTS IN STUDY 3

In May 2010, the preliminary email invitation to participate in the survey was sent to random sample of 565 companies in a Finnish metropolitan area. Over two weeks, 57 replied by email that they were willing to participate in the survey, 10% of all. All 57 were sent questionnaires by email with a more detailed invitation letter. Of these 57, 40 participants responded, for a response rate of 70%. The participants were stratified according to their profession, age and company size.

The background characteristics of the participants are presented in Tables 7 and 8. Both private and public organisations in industry and services were represented among the respondents.

The results of study 5 are published in article V.

Table 7. Demographic data of the study participants in workplace questionnaire: n(%)

Variable	Total n (%)
participants n	40
gender female	38 (97)
Age categories	n (%)
<30	3 (7)
31-40	6 (15)
41-50	18 (45)
51-60	11 (28)
>61	2 (5)
Enterprize size	n (%)
< 10 workers	3 (7)
11-50 workers	17 (43)
51-100 workers	10 (25)
>101 workers	10 (25)
Participants' working position*	n (%)
Occupational health contact person	23 (58)
Human resources	18 (45)
Occupational safety and health	13 (33)
Immediate supervisor	3 (7)
Higher managerial position	2(5)
Administration	8 (20)
Shop steward	1 (2)

* The same person may have different roles in the company and has been able to answer this question in multiple sites.

Table 8. The branch of business of the respondents. Results in %

Other community, social and personal services	23
Industry	18
Realestate, renting and business activities, business services	15
Wholesale and retail trade(motor vehicles and personal and household goods)	13
Financing	8
Accommodation and catering	5
Transport, storage and communication	5
Industry unknown	5
Public administration and defense, compulsory social security	3
Education	3
Health and social services	3
Construction	3

4.2 DATA COLLECTION

The study 1 was conducted using qualitative methods in 2009. A non-randomised sample was chosen. Data were collected in May-June 2009 by one interviewer. The interviews were individual, semi-structured, audio-taped with participant permission and approximately one hour long. All the participants were assured anonymity and informed of their right to withdraw from the study at any point.

Based on the data emerging from the interviews (study 1), the questionnaire used in the cross-sectional study (study 2) was developed based on the theory of planned behaviour (Ajzen 1991; Francis et al. 2004). The questionnaire was piloted in a group of 10 occupational physicians and modified based on the feedback received from this group. In May-June 2009, the questionnaires were sent to occupational nurses and occupational physicians belonging to the Finnish Association of Occupational Health Nurses and the Finnish Association of Occupational Health Physicians.

Based on previous cross-sectional questionnaire data from a survey of OH practitioners, the questionnaire to assess workplaces was developed (study 3). Question formulation was based on the theory of planned behaviour-type of question regarding experiences in the workplace, with questions targeted behavioural, normative and control beliefs (Ajzen 1991; Francis et al. 2004). Respondent characteristics were determined through five multiple-choice questions on the enterprises' occupation area and size and the participants' profession, age and gender. The scale for measuring the responses was dichotomous (yes, no, don't know). The survey was conducted in May 2010 with a non-randomised sample.

In both the questionnaire surveys, all the respondents returned the

completed questionnaires to the researcher by email. To ensure anonymity, no identification codes were on the questionnaire itself. No reminder was sent to non-respondents. The researcher coded and saved the data with SPSS.

4.3 STATISTICAL ANALYSES

4.3.1 STATISTICAL ANALYSIS OF STUDY 1

The data for the qualitative study were analysed using content analysis. The tape recordings of interviews were transcribed in full and read several times by the interviewer and then analysed to obtain a general view. Themes and questions that emerged in early interviews were explored and detailed in subsequent interviews.

4.3.2 STATISTICAL ANALYSIS OF STUDIES 2, 3

The data of these studies included both qualitative and quantitative data. The quantitative data were analysed by frequency and using cross-tabulation. A chi-square test was used to detect significant differences between classes in cross-tabulations. The explanatory variables were occupational status, mode of OHS and work experience in OHS. The outcome variables were on two levels (yes/no) or four levels (exist, exist partially, do not exist, don't know).

5 RESULTS

5.1 QUALITATIVE STUDY OF STRESS (STUDY 1)

Work-related stress was a familiar term to physicians and nurses. It was often associated with mental symptoms such as general strain, fatigue, exhaustion and burnout but was not seen as a disease in itself. Physicians in particular did not want to medicalise it. The factors causing stress were less familiar among nurses than physicians. Handling work-related stress in general was not experienced as easy and the own skills were seen as insufficient as well as nurses and doctors.

In none of the occupational health care units where participants worked were agreed-upon methods in place to assess and manage work-related stress.

Normally, work-related stress was not investigated actively and it arose only when an individual employee contacted OHS. The action modes varied by practitioner, patient and situation. Mostly, work-related stress was assessed more closely with non-structured interviews at the individual level. Also, depression and burnout questionnaires were used.

The assessment was rarely made at the organisational level. Tikka method, the workload appraisal method developed by FIOH, was used only seldom (Lindström 2004). After an assessment, interventions at the organisational level were rare. The actions generally were case-specific and depended on the participants' own experience and skills. Mostly single individuals were treated with the main actions of listening and supporting, but usually occupational psychologists were consulted if the contract with the enterprise allowed it. The follow-ups were irregular.

Even though enterprises have models or agreed-upon methods for the assessment and management of work-related stress, communication and collaboration of OHS with enterprises is difficult. To transfer the information or the stress management control at individual level to enterprises, the permission of the stressed person is needed. It was also difficult to get enterprises to understand and commit to the recommendations made by OHS.

Most participants were in favour of a standardised guideline. Clear protocols and clear role differentiation with concrete action proposals were needed. The main problem was not having equipment or a clear assessment method to measure work-related stress with clear limits to actions. Barriers to unification of assessment practices included the reported behaviour of different occupational groups, skills and cost of assessment.

Also, different factors that influence work-related stress management were mentioned. The general attitude and knowledge of OHS and enterprises were seen as important. The inadequacy of own abilities and a lack of skills influence the willingness to intervene, especially at the organisational level. The OHS's opportunities to influence working conditions were considered limited and enterprises' willingness and skills to intervene were also

suspected. The undefined co-operation and role descriptions were also seen as significant barriers.

To help the employer to cope with work-related stress was one of the responsibilities of OHS. The OHS was seen as a general appraiser of the situation and active participant in related matters. However, the role division should be made clearer because most actions to change work-related stress were the responsibility of enterprises.

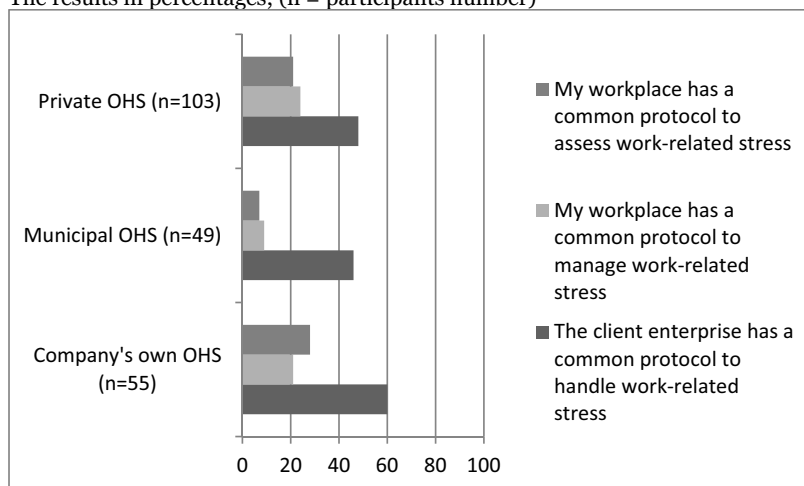
5.2 EVALUATION OF WORK-RELATED STRESS MANAGEMENT IN OHS (STUDY 2)

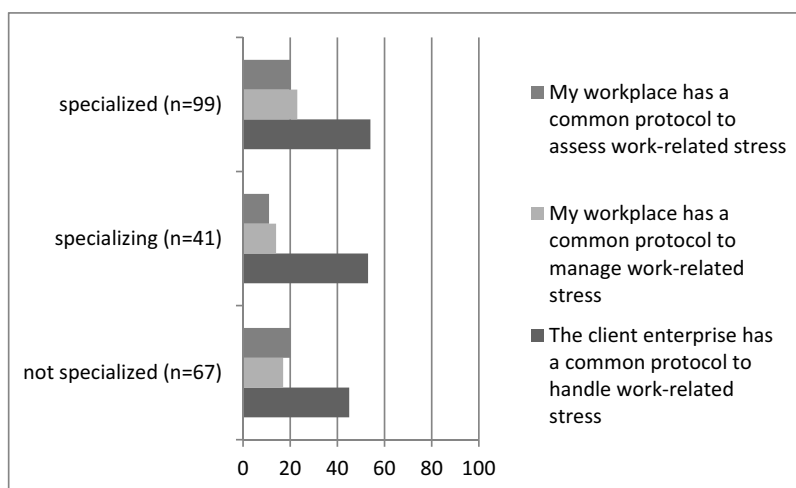
The concept of work-related stress was familiar to all physicians and nurses participating in the survey. Most of the physicians and nurses thought that the need for stress prevention and management would increase in the future.

About 22% of nurses working in the private sector and 20% of physicians working in the company's own OHS as well as specialized physicians reported that they have protocols to manage stress in their workplaces (Figures 2 and 3).

Figure 2. The commonness of protocols to assess and manage work-related stress in OH centre and enterprises by physicians (workplace and grade of specialisation)

The results in percentages; (n = participants number)





(common protocol to assess work-related stress in OHS units, $p < 0.01$, others statistically not significant)

Physicians in company's own OHS and private OHS reported more often than Public OHS unit to have a common method to assess work related stress. This difference between the OHS units was statistically significant.

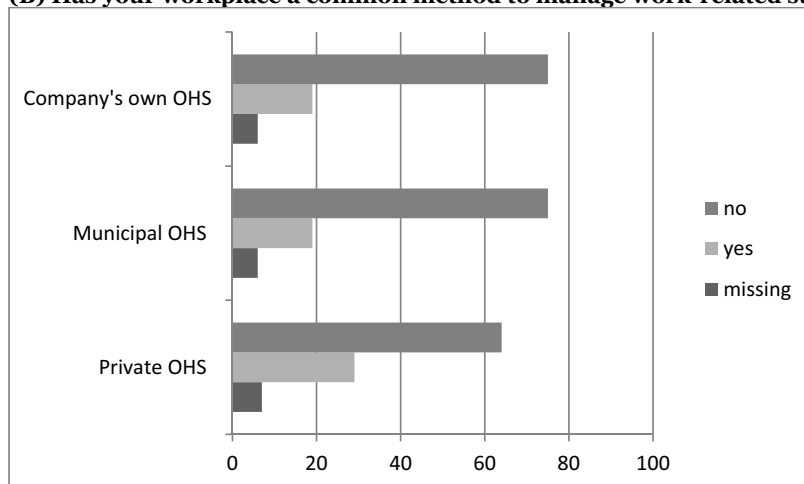
Nurses in private OHS reported significantly more often that their workplace had a common method to assess and manage work related stress.

However, the assessment and management methods were rare. Only 10-30% of OHS units reported to have these methods.

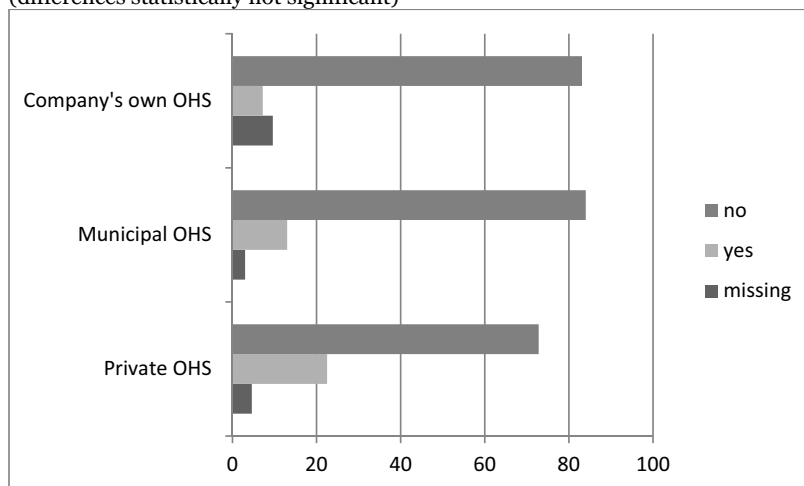
These protocols were not often mentioned by name. However, the most frequently named model was the early support (interference) model to manage problems related to work ability. No differences with respect to the use or naming of protocols between work sectors were found. Occupational physicians reported that the actions taken to address work-related stress depended on the individual case and included discussions within the OHS team and contact with the workplace.

Nearly 50% of the nurses and physicians estimated that their client companies did not have action plans for work-related stress. The action plans most frequently mentioned were early intervention models, unspecified work ability plans and guidance from occupational health services. Less frequently, respondents mentioned regular or random workplace assessments, worker performance assessments and management education and supervisor training.

Figure 3. Occupational health nurses' evaluation of common methods to assess and manage work-related stress in their workplace. (Results in percentages).
(A) Does your workplace have a common method to assess work-related stress?
(B) Has your workplace a common method to manage work-related stress?



(differences statistically not significant)



($p < 0.01$)

Most of the physicians (72%) did not have any common protocol to assess work-related stress. The situation was the same for occupational nurses (71%).

Generally, work-related stress was assessed through open-ended interviews and discussion with the stressed employee. Half of the physicians used a questionnaire when assessing symptoms and the most frequently used questionnaire was the Berger Burn Out Indicator 15. Nurses also used questionnaires to assess work-related stress, especially those who worked in company's own OHS. Half of the nurses used both interviews and questionnaires for assessments. The questionnaires nurses used were the

Work Stress Questionnaire developed by the Finnish Institute of Occupational Health, the Work Ability Index, a self-assessment tool for employees, the Bergen Burnout Indicator 15 (BBI-15), a measure of occupational burnout, and various depression scales. Only 6% mentioned conducting a workplace visit to assess work-related stress.

Action to manage work-related stress at the individual level was considered the most important operation at all OHSs. For physicians, this included supporting the individual employee, providing information on work-related stress and its management and informing workers of how they can modify their workload. Half of all OPs recommended that the employees should contact their supervisor about stress issues. Only a few planned to assess the workplace more closely using workplace visits and different assessments.

In general, the most frequently reported way for nurses to assist employees to manage work-related stress was to support a single person via a non-structured discussion of the situation, including an assessment of what individuals could do to diminish stress by themselves. Other methods mentioned were providing lifestyle advice, giving information about work stress, advising employees about how to handle stress and counseling employees on how to modify work overload situations. Workers were frequently counseled to consult occupational physicians or occupational health psychologists. Only in the private sector nurses (10%) mentioned a follow-up with subsequent control visits. Some nurses also assessed the need for sick leave.

Nearly half of the nurses also tried to include organisational structures in their interventions by guiding workers to contact their supervisors to discuss the problem with a physician. Only a few nurses planned to assess the workplace more closely after a report of occupational stress with a workplace visit and various assessments. Contacting the workplace and influencing the situation was often seen as difficult.

The opportunity to consult with occupational psychologists was generally rated as good by physicians (72%) and nurses (75%). Possibilities for consultations with a psychologist were rated worst in company's own OHSs. Nearly half of the physicians send patients to an occupational psychologist for individual support and counseling to handle stress. The recommendation for counseling with an OH psychologist was made most frequently by specialising physicians.

Physicians' collaboration with enterprises in matters concerning work-related stress varied but was possible on some level in nearly all OHSs. The enterprises' administration supported the interventions of the OHS for work-related stress to different degrees and mostly it was seen as inadequate and partial. The same opinion was shared by occupational nurses.

Collaboration with the enterprise and support of enterprises' administration were most commonly reported in company's own OHS by the physicians and nurses. The collaboration and contacts were less frequent in private OHSs according to physicians and also in the communal sector according to nurses.

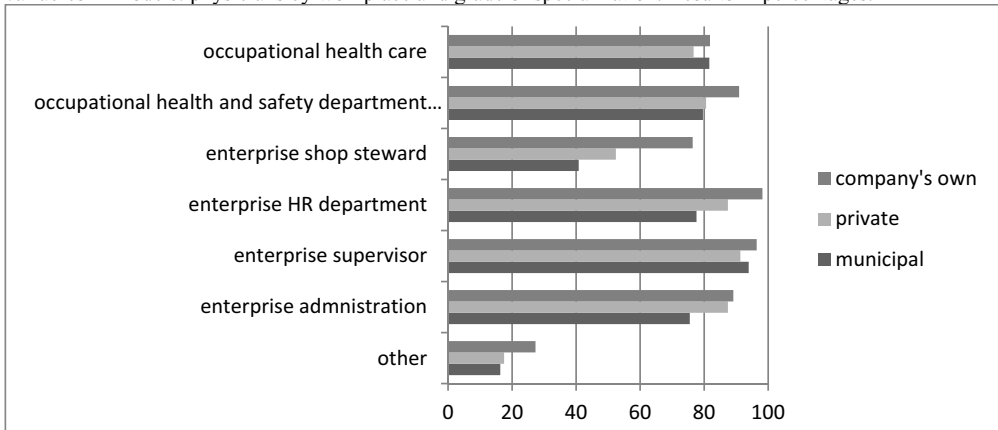
The companies contact to OHS varied also. Contact-making was mostly mentioned by the specialised physicians. The situation was also seen as the worst by specialising physicians. The lack of contact was mostly named by

municipal sector physicians and nurses and by physicians' specialisation groups by those specialising. Physicians' age and experience influenced the contact with the workplace.

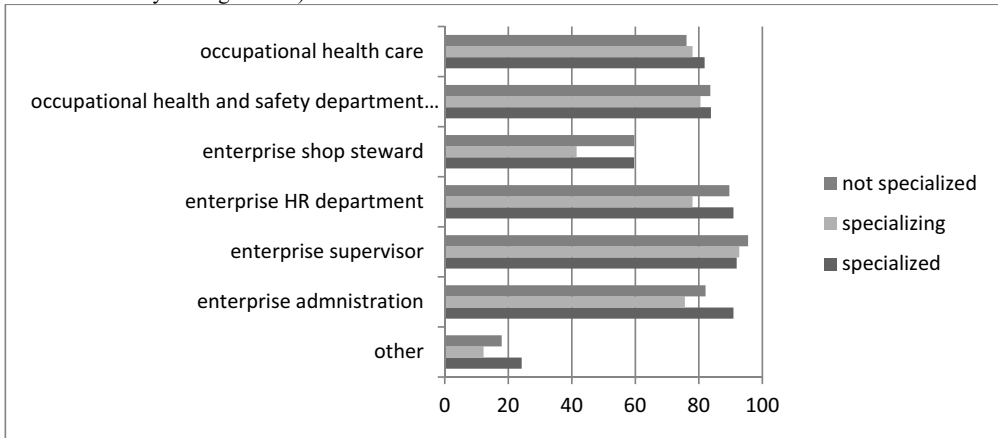
Occupational health physicians mainly wanted to collaborate with OSH, human resource management, supervisors and enterprise administrations in dealing with stress at work. More often than other service providers, company's own OHS included human resources, occupational safety and health and, especially, a local representative of employees in stress management collaborations (Figure 4).

Figure 4. Who should collaborate on work-related stress according to occupational physicians?

Variables in models: physicians by workplace and grade of specialization. Results in percentages.



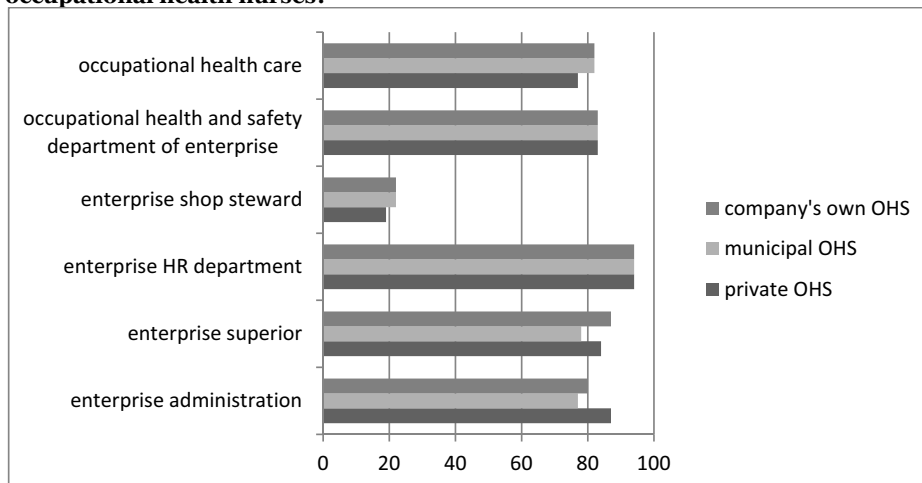
(enterprise HR department and OHS unit $p < 0.01$; enterprise shop steward and OHS unit $p = 0.001$, others statistically not significant)



(enterprise administration and physician specialization $p < 0.05$, others differences statistically not significant)

To nurses, collaborators were human resources, occupational safety and health departments, administrations, supervisors (Figure 5).

Figure 5. Who should collaborate about work-related stress according to occupational health nurses?



(differences between OHS units statistically not significant)

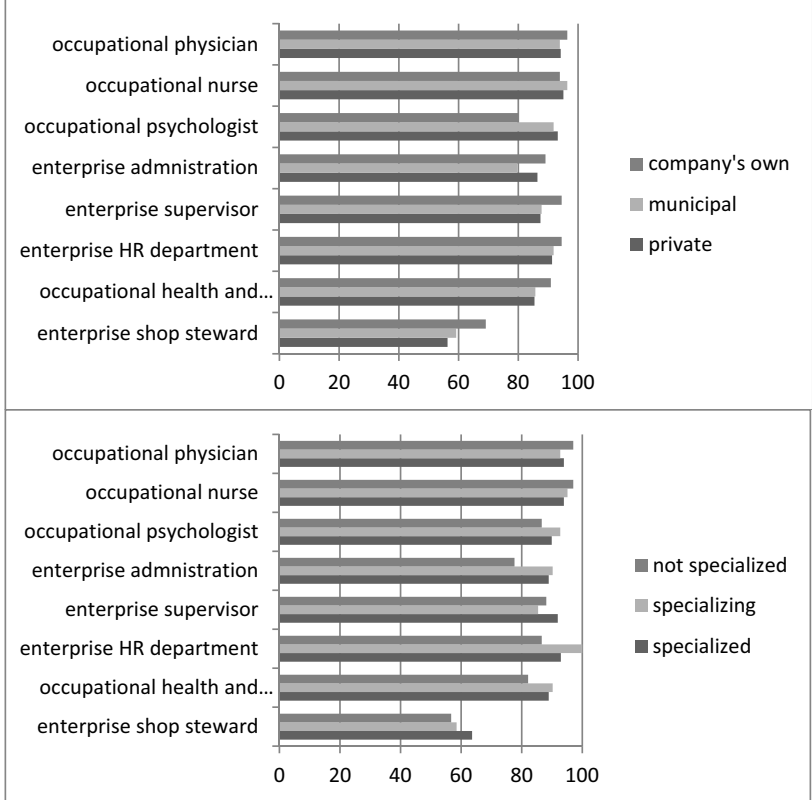
Co-operation with HR and superiors was seen as important to nurses and physicians. The nurses and physicians also saw the occupational health and safety department of enterprises as an important collaborator. In general, for the municipal sector, the main collaborators were OSH and OHS, but also HR. Specialising physicians did not view HR and administration as important collaborators as did non-specialised physicians. Shop stewards were also not seen as important for collaboration. The participants in all work sectors and all occupational grades said that they could collaborate and that collaboration could be improved.

As shown in Figure 6, the responsibility for addressing work-related stress was shared between OHSs and enterprises.

Handling work-related stress was seen as an OH responsibility by most of the nurses and physicians, especially nurses and physicians in OH. The division of responsibilities needs to be clarified between OHS and enterprises. In enterprises, the most responsible person was considered the immediate manager/superior. The responsibility was divided differently in various OH sectors. The responsibility was also given to OSH by nurses and to HR by physicians (Figures 6 and 7).

Figure 6. Whose responsibility is work-related stress?

Variables in models: physicians by workplace and grade of specialization. Results in percentages. The respondents could select more option.

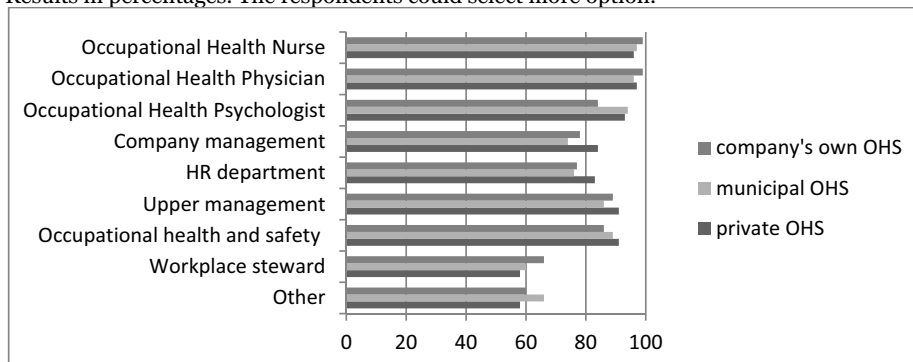


(enterprise HR department responsibility and physician's specialization $p < 0.05$, others statistically not significant)

According to most of the participants, cooperation and collaboration on matters concerning work-related stress between OHSs and enterprises can be improved. Two-thirds of the physicians had suggestions for how this cooperation could be improved. Almost 40% wanted more discussions and regular meetings with enterprises about work-related stress. They felt the collaboration could be closer and easier. They also reported that a low threshold for raising issues was important. Collaboration and communication were reported as being easier when they physicians had good relations with enterprises. However, restricted time to deal with each issue properly required commitment from both parties. Fifteen percent of respondents considered education and information about stress and its influence on health important.

Figure 7. Whose responsibility is work-related stress, according to occupational health nurses stratified by workplace?

Results in percentages. The respondents could select more option.



(occupational health psychologist responsibility and OHS unit $p < 0.05$, others statistically not significant)

5.3 ENTERPRISES' WORK-RELATED STRESS MANAGEMENT (STUDY 3)

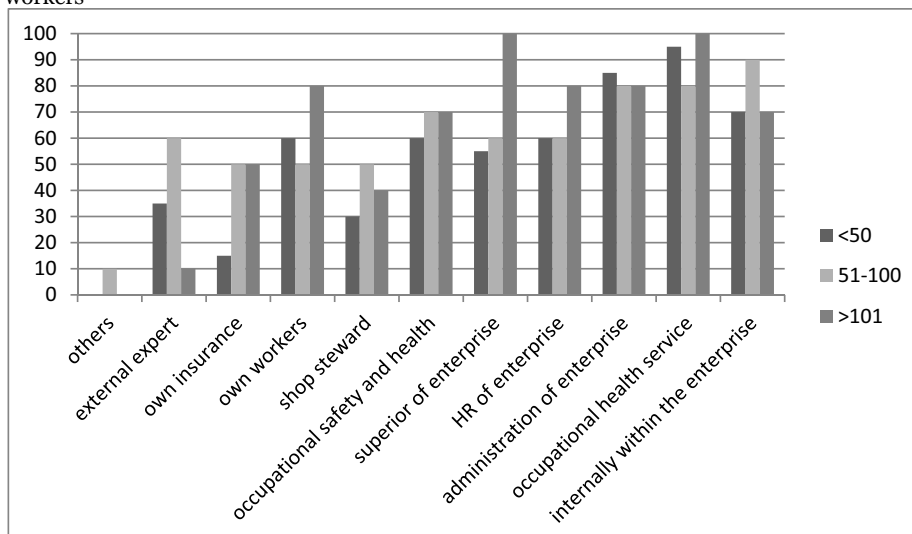
The concept of work-related stress was well known to most of the participants (98%). The EU's Framework Agreement on work-related stress was not as familiar. Work-related stress had been experienced in all of the workplaces surveyed. The participants' enterprises had contacted OHS suppliers regarding work-related stress in 64% of the cases and

The OHS producers had contacted the enterprises regarding work-related stress in 38% of the cases. OHS and enterprises had collaborated on issues relating to work-related stress in 65% of all cases. The administration supported intervention for work-related stress in 43% of cases, but in 33% of cases there was no administration support for interventions.

The responsibility of dealing with stress was seen belonging to the OHS and the enterprises. In all enterprises the OHS was seen the one of the main responsible of work-related stress. The division of responsibilities inside the companies varied according to enterprise size (Figure 8). In bigger companies the HR and superiors were seen more responsible of stress than administration. In smaller companies the administration was seen more responsible of work-related stress.

Figure 8. Tasks and responsibilities: Whose tasks include work-related stress?

The results in percentages. Workplace size: under 50 workers, 51-100 workers, over 101 workers



(results statistically not significant)

The collaboration between the workplace and OHS could be improved according to 70% of the respondents in enterprises. The main issues for improvement were increasing active communication between the workplace and OHS and holding regular practice meetings. The respondents hoped that the OHS would take a more active role in communicating with workplaces.

The respondents recognised that communication could be lacking sometimes due to employees who do not want to discuss stress issues with their employer. However, respondents wanted more transfer of information from OHS to supervisors about employees' situations.

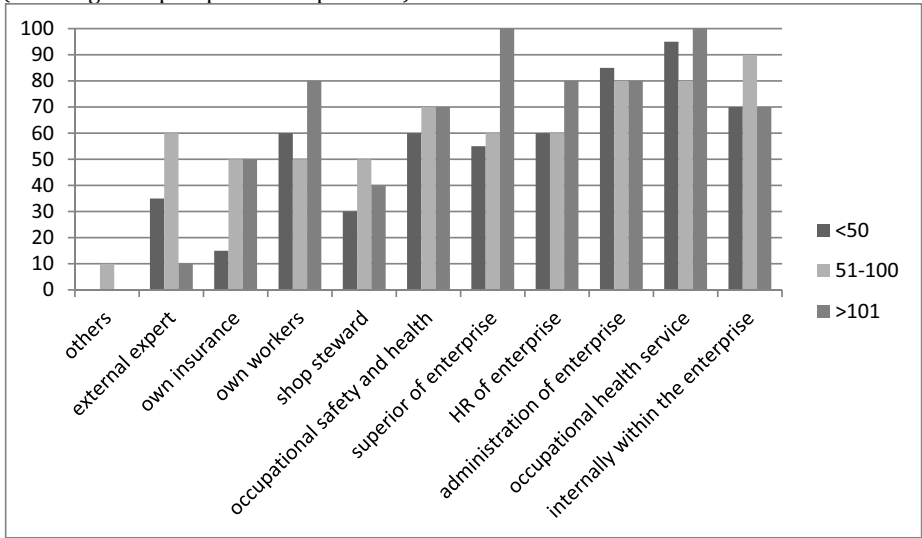
According to respondents, absenteeism caused by work-related stress or burnout should be actively monitored by OHS and preventive actions should be undertaken.

Respondents also requested education and information for the entire work community.

Respondents considered that collaboration on stress reduction inside enterprises was the responsibility of the management administration (83%), supervisors (68%), HR and occupational safety and health (65%) and employees (63%) (Figure 9).

Figure 9. Who should collaborate on work-related stress?

Results in percentages. Workplace size: under 50 workers, 51-100 workers, over 101 workers. (Selecting multiple options was possible.)



(results statistically not significant)

6 DISCUSSION

Although work-related stress was a familiar term to all participants in OHS as well as in enterprises, only few had the assessment and management protocol for it. The main actions to manage stress were made at individual level. Rarely activities were allocated to organisational level due to various reasons. At the enterprise level there were few effective practices and lack of management support contributed to inactivity.

Epidemiological knowledge about work-related stress factors (Lohela et al. 2009; Marchand et al. 2005; Nieuwenhuijsen et al. 2010) and instruments to measure psychosocial factors of work (Lander et al. 2009; Tabenelli et al. 2008) are available.

The WHO estimates that mental diseases, including stress-related disorders, will be the second leading cause of disability by the year 2020. Employees with stress experience impaired physical and mental functioning, increases in lost work days and more frequent use of health care services (Kalia 2002). Therefore the actions should be enhanced and effective practices should be introduced.

Work-related stress is not easy to deal with in the occupational health service or the workplace (Nieuwenhuijsen et al. 2003; Burke 1993; ESENER-2 2015). The participants of this study suggested active communication between the workplace and OHS to improve co-operation. Respondents in workplaces expected preventive activities from OHS. There seems to be inadequate knowledge of work-related stress prevention in workplaces and OHS support is needed.

The inadequacy of own abilities and lack of skills in the workplace influence OHS willingness to intervene, especially at the organisational level. OHS opportunities to influence working conditions were considered limited.

Different intervention strategies were used in workplaces to attain the stress reduction and control with skills training being the most popular. Other approaches included improvement of occupational qualifications and working conditions, physical exercise, relaxation and multi component interventions. However, conclusive evidence of intervention programmes' effectiveness requires further research (Czabala et al. 2011).

The systems approach to job stress has been recommended for the management of work stress, which includes interventions in all levels of the organisation. It emphasises primary prevention or focusing on stressors as the upstream determinants of job stress. Additionally, the system approach integrates work-directed (primary), worker-directed (secondary) and illness-directed (tertiary) interventions. It also includes meaningful participation of groups targeted by intervention and is context-sensitive. Systems approach intervention principles are illustrated by concrete examples of intervention strategies and activities. Further efforts are needed to promote, disseminate, implement and evaluate the systems approach to job stress and to improve cross-disciplinary co-operation in this effort (Lamontagne et al. 2007).

6.1 STRESS REDUCTION METHODS IN OCCUPATIONAL HEALTH SERVICE

The work-related stress was not actively surveyed by OHS. There were not common methods to handle work-related stress in OHS or in their client companies or in enterprises participating in study. In general, work stress came up with interviews when single employees brought it to the OHS knowledge. The management of stress was most often support of the individual employee. The assessment and management of stress was rarely made at the organisational level. The lack of skills influenced activity.

When the survey was conducted, there had not yet been published good practices for work-related stress interventions in Finnish OHS. Data on how work-related stress should be assessed or managed are available, but information on practice is missing (Leka et al. 2011). Different reviews of job stress interventions suggest that the common approach to combating job stress is to focus on the individual without due consideration of the direct impacts of working conditions on health (Houtman et al. 1998; Reynolds 2000; van der Klink et al. 2001).

OHS promotion actions require skills based on appropriate training and knowledge of the multidisciplinary dimensions of workplace interventions. This requires workplace assessment, planning for duties and actions and facilitating communication between workers and employers. Physicians' competencies for communication and their conflict resolution skills also are important factors (Anema et al. 2003; Burke 1993; Adams et al. 1999; de Boer et al. 2004).

Cognitive behavioural therapy is seen as one of the most effective methods to reduce work-related stress (Milczarek et al. 2012; Lamontagne et al. 2007; Richardson & Rothstein 2008; van der Klink & van Dijk 2003; Ruotsalainen 2015). However, OHS nurses or physicians are not educated as therapists and the interventions in research studies were conducted mostly by psychologists (Murphy 1987; Lander et al. 2009; Mikkelsen & Saksvik 1999; Lamontagne et al. 2007; Reynolds 2000; Semmer 2006). However, nurses may themselves handle work-related stress in their occupational health patients (van der Hek & Plomp 1997; Mimura & Griffiths 2003; Edwards & Burnad 2003). Nurses mainly focused on individual-level coping and counseling to reduce stress even though the focus should be directly influencing the working conditions causing the stress (Anema et al. 2003; Reynolds 2000; Semmer 2006).

The demand for physicians and nurses to have therapy skills was not supported by the results of this study. Neither occupational health physicians nor nurses considered themselves as therapists and they didn't want that role. In their opinion, therapeutic skills belong to occupational psychologists although not every OHS team in Finland has a psychologist available. Even occupational psychologists are not always trained in cognitive behavioural therapy. Social Insurance Institution does not compensate cognitive behavioural therapy in OHS but the employer can obtain therapy services at their own expense. Therefore, the roles and tasks in OHS should be defined according to the resources available.

OHS inside enterprises and their clients often had a joint action plan to address work-related stress. These OHS units serve mostly large companies and their physicians have traditionally had good opportunities to maintain contact with the employer. Other OHS providers can have problems in working with many different companies, also with small businesses, which can lead to fragmentation of their work (Kauppinen et al. 2013). Physicians working for a company's own OHS often feel more responsible than other physicians in dealing with work-related stress.

Physicians and nurses consulted an occupational health psychologist more seldom in company's own OHS units. The company's own OHS units had less often psychologist resources in use than in other OHS providers (Sauni et al 2012). It would seem that these units are used to operate themselves without psychology resources. Under the circumstances these nurses and physicians may collaborate more often with their clients and they considered superiors and HR to be the most important collaborators on work-related stress in general. Also the companies with own OHS units had most often in use the working capacity management, monitoring and early support approach (Sauni et al. 2012).

In bigger workplaces, the OHS contact-making was also more frequent. The administration's support for stress-related actions was also connected to enterprise size.

Specialising physicians contacted enterprises regarding stress management problems least often. Otherwise, the level of specialisation did not make a difference in stress management practices. Specialising physicians were younger and had less work experience in the occupational health care field.

The majority of the OPs, however, did not seem to be sufficiently prepared to carry out workplace actions related to stress management which is consistent with the findings of Burke (1993). There is a need to provide this group of physicians with comprehensive training to develop their skills; it can be difficult for physicians to accept their increasing challenges in psychosocial health in workplaces.

6.2 ENTERPRISE ACTIONS IN STRESS MANAGEMENT

Only few enterprises had own work-stress management model. The enterprises contacted OHS producers more often regarding to work-related stress than OHS contacted them. More than half of enterprises had collaborated with OHS on issues related to work-stress. In less than half of enterprises the administration did not support the work-related interventions. The responsibility of work-related stress has been given more commonly to OHS. The situation varied by the size of the companies. In large companies the HR and superiors were seen more responsible and in smaller companies the administration was seen more responsible of work-related

stress. Only middle size of companies kept OSH also responsible of work-related stress.

Employers recognise psychosocial risk factors for physical load and stress but they seem to underestimate the problem (Houtman et al. 1998; Milczarek et al. 2012; ESENER-2 2015). They seem to know very little about prevention of work-related stress (Houtman et al. 1998). Collaboration with OH can influence employers' knowledge of the health effects of stress and how it can be decreased. In general, employers need information and education about work-related stress (van Oostrom et al. 2008; Milczarek et al. 2012). Here, occupational health specialists should be the natural partners for employers and the entire workplace. In this study, OHS was not as active in bringing information to the organisation as expected.

In a survey in Finland, enterprises' administration was interested in the welfare and health of workers in 58% of cases (Kauppinen et al. 2013). The welfare of the staff was estimated to be the responsibility of the manager in less than half the cases. In a third of the cases, the human resource team was considered responsible (Aura et al. 2012; Kauppinen et al. 2013). In larger enterprises, the responsibility shifted from the manager to human resources.

The Finnish supervisor provided support and help to employees more often than in other EU countries (74% vs. 60%) on average according to the European Working Conditions Survey (Eurofound 2012). The figure was higher in small organisations where the supervisor was located in the vicinity of the workers (Eurofound 2012). The quality of leadership has developed positively in the 2000s in Finland (Kauppinen et al. 2013).

Job risk assessments and workplace surveys should identify factors that affect employees' psychological well-being and mental health. In the future, supervisory skills and occupational safety and health training should incorporate more information on psychological well-being (Kauppinen et al. 2013). The role of occupational safety and health should be clarified. Whether OSH should take a more prominent role in work-related stress management depends on a common understanding and methods of collaboration in dealing with work-related stress.

The benefits of well-being investment are not well known by employers. Also, the inconsistent and insufficient follow-up of well-being measures may result in partly distorted decision-making. Well-being was very rarely combined with the company's economic issues. However, well-being activities may put too much responsibility on OHS because the benefits of well-being activities are not well understood (Ravanti 2012; Ravanti & Pääkkönen 2012).

Scanty evidence exists about how workplace health programmes should be focused to have an impact on employees' health by reducing psychosocial job stressors and enhancing buffering factors at work (Murphy 1987; Mikkelsen & Saksvik 1999; Feilding 1989; Theorell 1999; Reynolds 2000; Gates 2001; van Oostrom et al. 2009).

In the United States, stress management activities were provided at 27% of workplaces (Feilding 1989). The frequency of activities provided varied by industry and region. The activities included group and individual counseling, special events, providing information about stress and providing a place to relax. These were mostly the same methods mentioned by Finnish occupational health nurses in this study. In the United States, nurses tried to

make organisational changes to reduce stress in 80% of cases (Feilding 1989). In our study, nurses rarely mentioned direct activities at the workplace and contact with the workplace was made by the individual employee.

A company should be aware of work-related stress and should be able to intervene on the factors causing it. It is important to inform the employer of frequent work-stress related symptoms observed in OHS at group level. However, in OHS, information concerning work-related stress for individual employees cannot be given to the employer without the patient's permission. Therefore, the most common activity in OHS is to guide the stressed employee to contact the supervisor and inform the workplace about stress. However, many employees are not willing to do so. And so it would be important to agree on the general level informing, so that the company should be aware of work-related stress and should take action on it.

6.3 WORKPLACE AND OCCUPATIONAL HEALTH COLLABORATION

The responsibility for stress management was many times shared between OHS and enterprises but more often it was given to OHS. The enterprises also made OHS more responsible to handle workplace stress than the enterprises themselves. By Finnish Occupational Safety Act the employer is responsible for the healthiness and safety of the work, not OHS provider, which acts only as an expert of the employer in these matters (Occupational Safety Act 738/2002).

The form of OHS organisation influenced the perceived responsibility for work-related stress and collaboration between the partners (Kauppinen et al. 2013). In company's own OHS, the nurses and physicians shared the responsibility with HR and the supervisors of the enterprises as psychologists were not involved. The physicians working for a company-owned OHS often felt more responsible than other physicians with regard to dealing with work-related stress. Collaboration between the OHS and workplaces is challenging but in company-owned OHSs this seemed to function better as practices and resources can be agreed upon more easily.

The nurses and physicians felt that the roles of OHS and the workplace should be more separate because most actions for modifying stress factors were seen as possible only for the enterprise. Inside the OHS, the different practices of professionals and their skills in interpreting situations, as well as the cost of assessment and action, were seen as barriers to the unification of OHS practices.

The communication and co-operation between the workplace and OHS varied greatly according to the size of the enterprise. The situation seemed to be more favourable in larger companies (larger than 100 employees) where the enterprises' administrations supported interventions on work-related stress more often than in smaller companies. This is supported by results of earlier Finnish assessments (Kauppinen 2013). In small businesses the safety

of the working environment and ability to develop it is evaluated to be weaker than in average (Liuhamo et al 2015). However, it does not appear that the workers in small enterprises feel worse eg. in relation to work related stress because the informal and personnel engaging procedures seem to compensate the shortcomings of formal OSH system (Liuhamo et al. 2015). Employees at small companies may experience less stress at work due to direct contact with the company management.

Respondents' views on who was responsible for handling work-related stress in the OHS and enterprise varied. The OHS was experiencing responsibility of work-related stress often in the smallest and biggest enterprises. In the medium-sized enterprises (between 51 and 101 employees), the importance of collaboration with administration, HR and the occupational health and safety department on work-related stress issues were emphasised. In the biggest enterprises, respondents viewed the OHS responsible as handling work-related stress with the HR department and supervisors, leaving administration in the background. In contrast, respondents from smaller companies attributed the responsibility to the administration and the OHS.

It is possible that in smaller workplaces HR functions are included in the administration's responsibilities as these companies do not have their own HR department. In larger workplaces, the administration may be seen as too remote from this kind of decision; thus, respondents may have assigned the responsibility to the HR department and supervisors. It would be important to clarify the responsibility of mapping and management of psychosocial risks which are clearly on the responsibility of the companies (Occupational Safety Act 738/2002).

The OHS professionals considered contact-making with enterprises difficult in general. The participants had difficulties in communicating with the client organisation or how to transfer information to enterprises. The youngest physicians responded most often that the contact-making was lacking. The specialising physicians reported the least contact with companies. The company's own OHS physicians were the most active. This can be due to the skills and relations of physicians. Their most common collaborators in enterprises were supervisors.

Traditional medical training does not offer skills in collaboration with enterprises to physicians and nurses (Puchalski et al. 2005). Improving the competence of OHS physicians and nurses in the field of workplace health promotion and collaboration with workplaces is a challenge.

Occupational health nurses' resources have increased in recent years compared to those of doctors and psychologists in Finnish OHS (Sauni et al. 2012). Occupational health nurses are well trained in coordination of health promotion in traditional risk factors and they may have the opportunity to collaborate and establish contacts between the workplace and OHS (Olszewski et al. 2007).

To assume their role as change agents to improve workplace psychosocial health, nurses should improve their communication skills and gain a stronger role in organisational interventions (Marinescu 2007). However, contacting and influencing workplaces had been considered difficult for nurses, as physicians too.

Recent legislation aims to promote preventive interventions at the workplace and the collaboration between the workplace and OHS (Occupational Health Care Act 1383/2001; Government Decree 708/2013). The Social Insurance Institution of Finland changed the reimbursement rates for preventive occupational health care in 2011. This change means that reimbursement rates for preventive occupational health care are higher (60% vs. 50%) if practices related to the management, follow-up and early intervention of work ability have been documented and jointly agreed upon by the workplace and the OHS provider (Social Insurance Institution of Finland). The aim is to strengthen the effectiveness of OHS to promote work ability and prevent disability. For the communication and collaboration to be effective, methods and responsibilities for them should be agreed upon between OHSs and enterprises. The new law requires that the employer give the necessary information of sick leaves to the OHS and the OHS provider must assess the remaining working capacity of the employee and together with employer determine the opportunities of employee to continue in work (The Act amending the Health Insurance Act 19/2012; the Act amending the Occupational Health Care Act 20/2012). This should improve cooperation between OHS and workplace.

7 METHODOLOGICAL CONSIDERATIONS

7.1 STUDY DESIGNS

Self-administered questionnaires were used to assess stress evaluation and intervention methods because no adequate questionnaire was available before.

The measurement of stress relies on self-assessment, which is prone to variation due to individuals' characteristics and perceptions. The questionnaire was developed for the needs of this study and was not tested for validity or reliability. The results may be different if measured with another instrument. The questionnaire was piloted and changes were made according to the pilot results.

Studying enterprise and OHS practices is challenging because different structures within and resources available to companies and OHSs may influence the responses. Contracts with different OHS suppliers can also influence the responses. This may determine the possibilities of OHS to influence workplace conditions.

When assessing practices, different understandings of work-related stress as a concept can also cause variation. The assessment of the situation is based on subjective views that vary from one individual and situation to another. In addition, assessing practices relating to work-related stress may cause variance in responses because to date no objective or standardised measure for work-related stress has been developed. Therefore, the assessment of the situation is based on subjective feelings, which vary from one individual and situation to another.

7.2 STUDY POPULATIONS

The strength of this study lies in its nationwide invitation to participate to all occupational health physicians and nurses who belong to Finnish Association of Occupational Health Physicians and Nurses and who have given their email addresses. The low overall response rate (20% for physicians, 30% for nurses and 10% for enterprises) has to be accepted for a mail survey, with difficult and delicate questions concerning own work methods. From the point of view of sampling theory, a high non-respondent rate is not acceptable. However, in mail surveys low response rates are common (Hansen et al. 2007).

The respondents represented practitioners from all OHS organisations, including the public and private sectors. Those who did not work in the OHS

field were excluded.

One limitation was that all occupational health physicians do not belong to the Finnish Association of Occupational Health Physicians. Each member upgrades their own data to the membership list because the list is not updated by the organizer. The secretary of the association believed that in the list were out of date e-mail addresses, but did not know how many. So we do not know how up-to-date the distribution list was, so we cannot be sure of the percentage of participants who were reached by the questionnaire. We estimate that our sample represents approximately 13% of occupational health physicians in the country because the Finnish Medical Association survey of all physicians and FIOH survey on Finnish OHS in 2010 included nearly 1600 occupational health physicians. When comparing the participants to statistics on physicians from these surveys from 2010, 53% of Finnish occupational health physicians was specialists, and not specialized 42% and 19% was at present undergoing their specialist training (Sauni 2012). These results are similar to our survey (48% was specialised physicians and 20% specialising physicians).

In the Finnish Institute of Occupational Health national survey, 55% of occupational health physicians were working in the private sector, 25% in the municipal sector and 20% in company's own OHS (Manninen 2009). In our survey, 50% were working in the private sector, 24% in the municipal sector and 26% in company's own OHS.

Based on a study by Occupational Health in Finland in 2010, in municipal OHS 52% of physicians was specialised in occupational health in 2008 (51% in 2011). In municipal enterprises, 51% was specialised in 2008 (66% in 2011). In company's own OHS, 76% of physicians was specialised in 2011 and 53% in the private sector. In this study, most of the physicians who were not specialised worked in the private sector. In municipal enterprises, most physicians (92%) were specialised.

The number of occupational nurses who participated in the survey represented the same limitation. Not all occupational health nurses belong to the Finnish Association of Occupational Health Nurses. Also nurses upgrade their own data to the member list. The secretary of the association of nurses believed that the list is not updated as OPs' list. That is why we did not know exactly how valid the email addresses were. The number of occupational nurses working in OHS was 2,068 in 2008, according to a Finnish survey, "Occupational health services in Finland 2007" (Manninen 2009). A total of 33% of nurses was working in municipal OHS, 48% in the private sector and 25% in company's own OHS. In our survey, 25% of the nurses worked in company's own OHS, 30% in municipal OHS and 45% in the private sector. This suggests that our sample corresponds to the national survey.

The study of enterprises included a sample of 40 enterprises, but only in the Helsinki metropolitan area. The difficulty was in reaching different enterprises by email. In addition, the study population was determined at the enterprise level. This led to heterogeneous distribution of respondents' position in the companies. Most of the participants were women, which also may reflect gender distribution in occupational health issues in the companies.

Respondents were invited to participate in the study by email in a given time, which may have limited the number of participants.

Another limitation of this study is that the results are based on self-reported information. Also, only those who were willing to participate responded and they may represent a highly motivated group. However, the information in the questionnaire was impersonal and we expected the respondents to report the situation as objectively as possible.

Differences emerged between the respondents and non-respondents with regards to age and gender, but it would be unrealistic to assume that refusal (or not responding) was due only to random factors.

While part of the refusal would be random, the non response was might have been biased towards the respondents considering work-related stress less important. Anonymity was ensured when the questionnaire was sent via email and responses were made anonymously. The data were collected and analysed without any personal data.

8 IMPLICATIONS FOR FUTURE RESEARCH

Research to date has focused primarily on individual-level interventions with far less attention to interventions at the legislative and policy level, employer and organisation level or job and task level. Future research is recommended to establish the effectiveness of organisational interventions using improved methodological designs and giving increased attention to the circumstances within organisations that promote the adoption of such interventions.

Future studies should evaluate interventions that include workplace prevention activities. These would include primary prevention through reducing sources of psychological ill health in the workplace. Future research should also include economic evaluation, which can assist employers in making decisions about which intervention to implement.

Future research can also focus on finding ways to improve collaboration on work-related stress remembering the employer's responsibilities by legislation.

9 CONCLUSION

Even though work-related stress was well known to all participants, it was considered difficult to handle. Action plans to assess and manage work-related stress at organizational level were uncommon among Finnish OHS physicians and nurses and their client enterprises. The activities of OHS for assessing and managing work-related stress are not standardised and are unsystematic, being focused mainly on individual-level actions. OHS practitioners assessed work-related stress with unstructured open interviews, following which they gave individual support and advice/counseling. In some cases, the clients were given a recommendation to contact their supervisors. There were no common protocols to guide OHS team members or enterprises in practice or any agreed-upon ways of communication that might have shared the responsibility for stress management with enterprises. OHS professionals saw the OHS as having greater responsibility in managing work-related stress than the enterprises themselves. The collaboration between the workplace and OHS was seen as important and could be increased.

Even when the legislation is very clear about the responsibilities of employer about health and safety of work environment, the situation in relation to work related stress was not clear to participants of our study. The situation should be clarified and practices accordingly developed.

At the moment, there is more information about the activities causing stress in occupational safety and health than in 2009. There is also information on the collaboration among the workplace and OSH organisation. There is not much information about collaboration between workplace and OHS. The collaboration between organisations and OHS should be made more efficient and include also OSH. The new legislation, which augments the collaboration regarding longer sick leaves between organisations and OHS, can also influence positively work-related stress, increasing communication between these partners.

The main problem in this study was that neither OHS nor workplaces had an equipment or a clear assessment method for measuring work-related stress with clear limits to actions. Barriers to unification of methods varied for many reasons such as lack of skills or lack of support or unrealistic expectations.

Co-operation between OHS and the workplace must improve. One good solution for improving this co-operation has been participatory workplace interventions. Workplace interventions that appear effective include those focused on return-to-work situations and prevention of early retirement.

Large sized companies are willing to collaborate with occupational health services in stress management, but actions are undertaken mostly on an individual basis.

Multi-professional team including a psychologist was lacking in most OHS teams. Private sector and especially municipal sector OHS physicians considered themselves more distant from the management of client

enterprises but their consultation options were better. During the last years the private sector has increased and companies' own centres have declined in number. This may affect future cooperation. Good practices that already exist should be to find and keep.

The study was undertaken during May-June, 2009. Since then tools to handle work-related stress have been developed both internationally and nationally. The Finnish guideline for OHS to handle work-related stress has been published but not implemented.

The campaign of EU-OSHA 2014-2015 has focused on work-related stress. Healthy Workplaces Campaign has had three key objectives: (1) to raise awareness and improve our understanding of stress and psychosocial risks in the workplace; (2) to provide guidance, support and practical tools for managing risks; and (3) to highlight the benefits of managing psychosocial risks for workers and businesses. The campaign was targeted to workplaces and this might improve cooperation between workplace and OHS.

New national legislation in Finland has underlined the importance of the co-operation of OHS professionals, and the employers and employees of the enterprises.

At the moment, there seems to be the prerequisites for a successful intervention program to diminish psychosocial work load and risks factors effectively.

10 POLICY IMPLICATIONS AND RECOMMENDATIONS

10.1 ORGANISATIONAL LEVEL

The responsibility of work-related stress management is clearly targeted to enterprises by Finnish legislation. During the recent decades good practices and recommendations have been identified. Exporting them to workplaces was going on by the campaign of EU-OSHA 2014-2015. New evidence of work related health and proper management practices may help in reduction of work related stress. The role of line managers and supervisors is central in reduction of stress and conflict in work (NICE 2015).

Perhaps the introduction of these practices will be more efficient if there would be more evaluation and evidence of the cost- effectiveness of these practices.

10.2 OCCUPATIONAL HEALTH SERVICE

Evaluating the risk factors and their consequences to workers' health in workplaces is the major task of OHS but this evaluation is not systematic in the case of psychosocial risk factors. Such psychosocial estimation is evaluated to be difficult. There is now an evidence-based guideline about work-related stress developed by FIOH with support of the Ministry of Social Affairs and Health (Joosen et al. 2015; Liira et al 2010). The guideline should be implemented in practice.

The cost of sick leave and retirement due to depression has influenced political decisions. A national evidence based guideline (EBG) to handle depression has been published and extensive education on OHS and specialised care has been organised with the support of the Ministry of Social Affairs and Health. Work-related stress would need the same emphasis because of its wide impact on health and workability and thus economic aspects.

10.3 COLLABORATION

The responsibility for stress management was seen as a task of occupational health physicians and nurses, but more importance should be placed on the company's responsibility for workplace health and well-being. However, some stressors in the work environment are so harmful that they cause strain to all employees. Such conditions require an immediate response from the employer to change the work environment. OHS can take on the role in assessing stress and helping enterprises plan primary preventive interventions to meet the specific needs of the employees and the organisation.

Managing work-related ill health is the core task of OPs. It is clear that the OHS can't handle this alone and it needs supervisors and client organisations to collaborate to change the situation in the workplace. OSH is the organisation inside the workplace who can be a part of the collaboration between workplace and OHS dealing with psychological well-being. When planning a worksite intervention, the administration's, OSH's and entire enterprise's commitment, confidence in OHS, evaluation and feedback about the programme are needed.

To create more influential practices, more evidence-based information about how to manage work-related stress and work communities should be provided to agree on common protocols to manage it. The collaboration of OHS with companies should be improved. In particular, companies' attitude was not seen as an obstacle to intervention.

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APPENDIX 1.

THE QUESTIONNAIRE TO OHS

The self- completed questionnaire consisted of questions:

- Are you familiar with the concept of work-related stress or do you need more information about it?
- Do you meet stressed workers in your practice?
- How do you assess work-related stress in your practice or how do you handle it?
- Do your occupational health care units have a common action plan to assess work-related stress, if so, what is it?
- Do your occupational health care units have a common protocol to manage work-related stress, if so, what is it?
- How do you think the demand for stress prevention and management services offered by OHS will develop in the future?
- Does the enterprises administration support the intervention about work related stress?
- Do they contact to you by work related stress form workplace?
- Do your client enterprises have a common protocol to assess and manage work-related stress, if so, what is it?
- Whose responsibility is work related stress?
- Can you collaborate with your account enterprises?
- Can the cooperation and collaboration be improved between OH and enterprises and if so, how?
- What do you think, should OH collaborate with workplace regarding work related stress handling and with whom?
- Can you consult the occupational health psychologist?
- Have you been in any training regarding work stress or work overload

APPENDIX 2.

THE QUESTIONNAIRE TO WORKPLACES

The self-completed questionnaire consisted of questions:

-Have you heard about the autonomous framework agreement on work-related stress signed by Europe UNICE / UEAPME, CEEP and the ETUC and the Finnish social partners have made a local agreement on it and had implemented it?

- Is the concept of work-related stress well known?

- Has in your enterprise been raised sometimes work-related stress?

-Has your enterprise contacted to yours OH producers about work-related stress?

-Has your OH producer contacted to your company about work-related stress?

- Does your enterprise collaborate with your OH producer about work-related stress and can the collaboration be improved somehow?

-Whose responsibility/duties are included work-related stress?

-Who have to collaborate regarding work-related stress?

- Does your company have a common protocol to assess and handle work-related stress?

- Does your company's administration support the interference on work-related stress?

- Do you have participated to any kind of training of evaluating psychological overloading, wellness of work community and work-related stress?

